TRANSACTIONS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY

FOR THE YEAR 1907

PART I

PUBLISHED BY THE SOCIETY
BOSTON
NINETEEN HUNDRED AND SEVEN

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

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Massachusetts Horticultural Society

1907

The Transactions of the Society are issued annually in two parts under the direction of the Committee on Lectures and Publications.

Communications relating to the objects of the Society, its publications, exhibitions, and membership, may be addressed to William P. Rich, Secretary, Horticultural Hall, No. 300 Massachusetts Avenue, Boston, Massachusetts.

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Committee on Lectures and Publications.

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THE INAUGURAL MEETING, JANUARY 5, 1907.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

1907. PART I.

INAUGURAL MEETING.

The Inaugural Meeting of the Massachusetts Horticultural Society for the year 1907 was held at Horticultural Hall, Boston, on Saturday, January 5, at twelve o'clock, noon.

Vice President Walter Hunnewell presided and there were fifty members present.

Mr. Hunnewell, in calling the meeting to order, said that the assembly today was for the purpose of inaugurating a new administration in the history of the Society. The gentleman chosen to fill the office of President for the ensuing year was well known in the community, was interested in horticultural matters, was a veteran of the Civil War, and was worthy of the generous support of the Society. He then introduced General Stephen M. Weld who delivered the following inaugural address.

Inaugural Address of President Weld.

To the members of the Massachusetts Horticultural Society:

In assuming the office of President of your Society I shall endeavor to perform my duties with due regard to the interests of all branches represented in the Society. Bearing in mind the able and dignified

manner in which my predecessors have carried on the office, I hope that I shall be able to come somewhere near the standard they have set. I shall ask for the coöperation and assistance of all the members of your body, as only in that way can the best results be brought about and the aims sought for by your Society most readily accomplished.

Founded in 1829, you are now beginning the seventy-eighth year of your history. From small beginnings you have attained to the position of one of the leading societies in the world. It will be my earnest purpose to aid in continuing this steady progress which you have made in the past. I shall try to see that all branches of horticulture receive fair treatment and a due proportion of the proceeds of the Society.

Your Society is unique among similar institutions. You have gone ahead maintaining the work for which you were founded, and increasing your usefulness each year, with no evidence of advancing years and no evidence of declining interest. Other institutions have come and gone, but ours has kept on with no sign of decay. Your interest in the work is as great today as it has ever been, and it shows upon what sound foundations the founders of the Society built. This should stimulate us to renewed activity and endeavor to broaden our work, and increase the usefulness of the Society.

New branches should be taken up as fast as we can get the means and the money to do so. The matter of school gardens which were started about fifteen years ago illustrates the importance of such undertakings. These were so successful that the children went to their homes and started gardens there and prizes have been offered by the Society with good results, as I understand, in this line. The Society should be considered an educational institution. Lectures and exhibitions are now the principal methods of carrying on the work.

Amongst other things I think the control and possible extermination of gypsy and brown-tail moths and other insect pests should be added to our work. What we as a Society can do might be in itself small, but by supplementing and aiding state work we might accomplish a great deal. This also applies to the various pests which attack fruit, vegetables, and flowers. I commend this to the earnest attention of the various committees who have these branches of our Society's work in hand.

To accomplish all this we must increase the income of the Society. Right here it is perhaps fitting I should speak of the finances of the Society. From figures obtained from your Treasurer I find that the income and expenses for the last few years have been as follows:—

For the year ending Dec. 31, 1906, the income was $21,710.71; the expenses were $24,112.73. For the year 1905 the income was $17,811.37; the expenses were $20,588.27. For the last four years the average expenses were $22,042.32 and the average income was $19,372.05.

No business concern, whether incorporated or not, can be run successfully with such figures as these. We must cut down our expenses to our income, or increase our income.

There are various ways of doing this. One is to increase the use of our building by letting the same for purposes of fairs, lectures, etc. There is no building in Boston which has a better location than ours for a public hall, and there is no reason why our halls should not be more in demand for public uses. Possibly a small sum of money will have to be spent in improving the appearance of the lecture hall and in making the acoustic properties better. I understand that in one of the fairs the halls were hung with tapestries and that the acoustic properties were then perfect. I would suggest the appointment of a committee of gentlemen who can take this matter up and give it the attention it deserves. The rental this year has been about $4969.00 against $1970.00 last year.

Another method of increasing our income is by increasing the membership. Still another method is by doing all we can to get our friends and all persons interested in horticulture to leave us funds by will. I will read you the following letter to show that by interesting even people who are not members of the Society in horticulture and in the work of the Society they will often remember us when they die.

(COPY)

50 Congress Street, Boston.

Massachusetts Horticultural Society,
300 Massachusetts Avenue,
Boston.

Gentlemen:—

Under the will of Charles E. French, of which I am one of the execu-

tors, your Society is entitled to a legacy of three thousand dollars, this sum to be held in trust and the income therefrom expended in prizes for the best specimens of such fruit or vegetables as may be selected by your Trustees, the trust to be known as the "Benjamin V. French Fund"; and also to a legacy of five thousand dollars, this sum to be held in trust and the income therefrom distributed in prizes for such specimens of flora as your Trustees may select, this trust to be known as the "John Allen French Fund."

The executors are about to close the estate but before paying these legacies to you they desire your Society to pass as soon as possible a vote in substantially the form herewith enclosed, and send a copy of the same to the executors.

Yours truly,

Otis Norcross,
for self and co-Ex'rs,
Estate of Charles E. French.

I have spoken of the various means of increasing our income. As to decreasing our expenses, it seems to me that we might reduce both the number and the amount of our cash prizes, and give certificates of merit, or medals, which would not be so expensive. This, I understand, is in line with the work of the most successful horticultural societies abroad. I hope this will receive the earnest attention of your Trustees.

We have lost by death during the year twenty-six life and annual members, three honorary, and two corresponding members. Many of these have served in years past on committees, and in other ways have been actively interested in the work of the Society.

Among them we may especially call to mind Benjamin P. Ware of Marblehead, for eight years a Vice President, and a man well known for his strong interest in the agricultural affairs of the state; Professor Nathaniel S. Shaler, the eminent scientist and teacher of Harvard University; Mrs. Charlotte N. S. Horner of Georgetown, well remembered by frequenters at our exhibitions a generation ago for her displays of native plants; and Mrs. Anna D. Wood of Newton, also held in appreciative remembrance for her floricultural work among us; Samuel Hartwell, for twenty-four years a member of the fruit or vegetable committees, and a constant contributor at our exhibitions of fruits and vegetables from his orchard and vineyard at Lincoln; Cephas H. Brackett, formerly of Brighton, a member of the Committee on vegetables from 1883

to 1901; and others equally well known in the business and professional circles of our city and state.

Next to its honorable reputation as a leader in American horticulture, earned in its career of seventy-seven years, certainly the most valuable asset of the Society is its library. This can only be compared with the libraries of the National Societies of England, France, and Germany; and those best able to judge are of the opinion that the library of this Society far surpasses the other horticultural libraries of the world in the value of its books, in its comprehensiveness, and in its excellent arrangement and condition. In establishing this library the Society has performed an important duty for the community, and I feel sure that every member is anxious to see it enlarged and improved as opportunity and means permit. I am informed that notwithstanding the excellence of our library it has not been as freely used as it should have been.

At the conclusion of his address President Weld assumed the duties of his position and called for the annual reports of the chairmen of the various committees which were presented in the following order.

Report of the Board of Trustees.

Report of the Finance Committee, Walter Hunnewell, Chairman.

Report of the Treasurer.

Report of the Secretary and Librarian.

Report of the Delegate to the State Board of Agriculture, William H. Spooner, Delegate.

Report of the Committee on Lectures and Publications, J. Woodward Manning, Chairman.

Report of the Committee on Prizes and Exhibitions, John K. M. L. Farquhar, Chairman.

Report of the Committee on Plants and Flowers, Arthur H. Fewkes, Chairman.

Report of the Committee on Fruits, Wilfrid Wheeler. Chairman.

Report of the Committee on Vegetables, Warren W. Rawson, Chairman.

Report of the Committee on Gardens, Oakes Ames, Chairman.

Report of the Committee on Children's Gardens, Henry S. Adams, Chairman.

Report of the Inspector to the State Board of Agriculture, Francis H. Appleton, Inspector.

On motion of Mr. Spooner it was voted that the various reports be accepted and referred to the Committee on Publications.

The meeting was then dissolved.

William P. Rich,
Secretary.

HORTICULTURAL PAPERS AND DISCUSSIONS.

THE IRIS AND ITS CULTURE.

BY J. WOODWARD MANNING, READING, MASS.

Delivered before the Society, with stereopticon illustrations, January 12, 1907.

While the genera of the Iris family are confined almost exclusively to the Northern Hemisphere ranging from the Atlas Mountains in northern Africa to a latitude of about forty degrees north, they are closely represented in the tropics by the Moræas and Maricas, similar in effect but botanically distinct; while Crocus, Gladiolus, Freesia, Tigridia, and Ixia are familiar genera and serve to represent the family in all parts of the temperate and tropic world.

The iris, or as popularly known the fleur de lis, rainbow-flower, or poor man's orchid, etc., has more than 170 described pure species, of which about 100 have been cultivated at times by American horticulturists while somewhat more than 130 species are grown by English iris fanciers among which, however, a portion fail to combine sufficient distinction, beauty, or ease of culture to warrant their extended use. While, however, perhaps less than a hundred species are to be recommended for cultivation in American or particularly New England gardens, this is but a fraction of the number of varieties which by selection or cross fertilization have been produced and contribute most advantageously to garden ornamentation.

The question of the best species, their peculiar requirements, if any, their ornamental and color effect, their better varieties and season of bloom are matters of interest to the New England flower lover, because there is much of neglected beauty in the class from lack of this knowledge and danger of disappointment from a misunderstanding of the limitations in color range. It is possible, too, to very materially extend the period of bloom as compared with the usual results attained.

Such irises as figure in horticultural uses are divided into two classes, those of bulbous nature and those with rhizomes, the latter varying in this character from the conspicuous surface rhizomes of the very familiar German iris to very narrow, inconspicuous, subterraneous types of rhizomes in which the roots are the more conspicuous.

The bulbous irises are most familiarly known by the English and Spanish types, both of which have been very greatly improved by selection. The English iris (*Iris xiphioides*), growing to a height of a foot and a half to two feet, bears two to three flowers to a stalk and varies in color from the purest white form of Mont Blanc through shades of lavender, blue, and purple, of which Lord Palmerston with deep rich crimson-purple falls and purple-claret standards is perhaps the best of the darker colored varieties. Many, too, are showily striped, flaked and blotched with shades of richer colors than the general tone of the flowers. The Spanish iris (*Iris Xiphium*) has taller and more conspicuous standards than the last and the markings are more clearly defined on the falls than is the case with the English iris; possibly the improvement by selection has covered a longer period with the Spanish iris. In any event such a variety as the Thunderbolt is very noteworthy in its large comparative size of flower and grows two feet or more high. The flowers are richly colored in bronze with a remarkably broad signal patch of yellow on each of the falls. The better varieties of this class are Blanche Superba, of purest white; Golden Cup, a very popular yellow; and Cantab of ultramarine blue with orange blotch and dark blue standards.

Both English and Spanish iris are of easy garden culture, planted in autumn, the English iris requiring the greater moisture of the two, the bulbs being planted at a depth of from three to five inches while a mulch is an advantage. There are a few other species of tall-growing bulbous irises, such as *Iris juncea* and the rare *Boissieri*, but they probably are seldom imported and do not compare horticulturally with the selected varieties of the last two species.

The dwarf bulbous species are most familiarly represented by the *Iris reticulata*, a native of Palestine, varying somewhat in type but gorgeous in coloring with its brilliant shadings of purple and gold, and of a delicious violet fragrance. Flowering as it does

naturally in March our climatic conditions require its cultivation in frames to protect the flowers from staining by dampness, though it is hardy and can be used very advantageously in rockeries or in protected, sunny situations within easy access to the house. The Armenian *Iris Bakeriana* is even earlier, but less showy, though of rich markings of purple and orange in connection with its general blue tone. *I. Vartani* is another species from Asia Minor, but more difficult to manage than the others and more tender.

Another class of bulbous species is known under the name of Juno irises, natives of the Caucasus, Afghanistan, and Northern India. They have comparatively large bulbs and require well-drained situations and a thorough sun baking in summer to insure their continuance and future flowering. They have generally leafy stems with several flowers closely set to the stalk, and combine all the ranges of coloring in the family. They closely follow the last group in their flowering period, but their inadaptability for cutting and the peculiar cultural conditions they demand without particular increase in their color range fail to promise much for their culture in American gardens except to the fancier. Of them *I. Rosenbachiana, Sindjarensis,* and *Assyriaca* are perhaps the best.

Of rhizomatous irises the bugbear class is that of the Onocyclus group, generally known as Cushion irises. The most familiar species is the Mourning iris or *Iris susiana.* All have very broad petals, and among them are the most remarkable forms in coloring. Many of the flowers are most delicately veined and reticulated, generally with a darker color on a light background, and were they of easier growth they could not fail to be popular in every garden. They are from Persia, Armenia, and Afghanistan and naturally require hard sun baking after their short blooming season. They can hardly be called hardy, and in any event require such special cultural attention that they cannot be recommended. The wonderfully full flowers with their peculiar markings such as shown in *I. paradoxa, Iberica,* and the so-called Prince of irises, *I. Gatesii,* make them particularly interesting and tantalizing.

Closely allied to the Onocyclus group is another popularly known as the Regelia section in which the petals are narrower and the plants are hardier and considerably more easily cultivated, but of even greater importance is the fact that they hybridize freely

with the Onocyclus group and the progeny are comparatively easily cultivated, increase rapidly, and are of prolific blooming quality. Mr. C. G. van Tubergen, Jr., of Haarlem, Holland, has been largely responsible for this group of so-called Regelio-Cyclus irises, obtaining them by crossing *Iris Korolkowi* and its varieties, *I. Leichtlini*, *I. Sarii*, and *I. Suwarowi* with various species of the Onocylus group. Such resulting progeny as Psyche, lavender, beautifully striped with rich purple with darker toned falls; Charon, rich coppery purple with deep purple markings; and Iphigenia, intermediate in its color range, show something of the result, while the shape of the flowers is a happy medium between the two groups.

Probably this group has not been extensively cultivated in this country as yet and we will look forward with deep interest to the results.

We now arrive at a point where it is impossible to make a distinct horticultural line between classes based on botanical classification, but by dividing the remaining classes and groups into those with and without surface rhizomes it is possible to make a form of subdivision.

The surface rhizomed forms are more popularly known as German irises, though the true *Iris Germanica* is but one of many species. The dwarf forms are greatly neglected, being but seldom seen in American gardens, yet possessing great merit in their range of bloom and the earliness of flowering period. *Iris pumila* is better known than the other species and, growing about nine inches high, bears in April showy flowers of deep purple in profusion. As an edging plant it has much merit and there are various selected varieties ranging from pearly white through clear blues to the deeper colored typical form. *Iris pumila* is certainly worthy of far greater use than has been the case in the past. *I. verna*, another dwarf species from the Carolinas, is equally dwarf, quite prolific in bloom, with purple shades, and blooms about the same time. This does not show the improvement and fixed forms, however, that is true with the last species. The gem among dwarf irises, however, is the crested *Iris cristata*, only growing about six inches high with light green foliage. It forms a carpet of verdure and bears freely light blue flowers beautifully blotched with golden yellow. I know

no form of dwarf iris with as great adaptability of uses as this either for naturalizing or for varied garden usage.

Commonly confounded with *Iris pumila* is a form with flowers borne singly on the stalk, and with somewhat broader leaves. This is *Iris Chamaeiris*, or its variety *Olbiensis* or *Italica*. The type bears yellow flowers with the falls veined with purple.

Another small and showy dwarf species, known as *Iris flavissima* or *Bloudovii*, a native of Siberia, bears showy pure yellow flowers. While there are a number of other dwarf species they have no particular horticultural merit over these.

Intermediate between these dwarf irises and the taller growing German iris has appeared a new race, within a few years, under the name of Alpine iris, these being produced by Mr. W. J. Caparne of Rohais, Guernsey. These are the result of crossing many of the dwarf species with taller growing kinds; the progeny vary in stature and are claimed to give flowers over a period of six to nine months. Probably, however, this refers to a collection of the hybrids rather than any single variety. Undoubtedly they have much of interest, and trial will eventually prove such merit and distinction as they may possess.

For perfect hardihood, freedom of bloom, and range of color we can, however, with the dwarf and taller growing German irises feel quite independent of the more difficult forms. The German iris, as popularly known, varies in growth in the varied forms from fifteen to forty inches. The earlier varieties commence blooming in early May, and by a careful selection of kinds it is possible to keep up a succession of flowers until late June.

Many species are responsible for the beauty of the class, and their crossing and selection have confused their origin. *Iris variegata* shows its influence in the prevailing yellow color of the standards of the following varieties, with the rather remarkable exception of the Innocenza, a very fine form, pure white throughout. Other popular and good named kinds are Beaconsfield, standards yellow, falls crimson, edged with primrose; Gracchus, standards yellow, falls crimson reticulated with white; Maori King, standards yellow, falls rich velvety crimson margined with gold; Sans Souci, standards yellow, falls yellow reticulated with crimson brown; and Regina, standards yellow, falls white conspicuously veined lilac and edged with primrose yellow.

Iris sambucina crossed with *I. pallida* has given us the very beautiful variety Madame Chereau, while the cross between *variegata* and *sambucina* produces *Iris neglecta* by selection from which we have Clarissima with lavender standards and falls reticulated with crimson purple on a white ground; Cythere, standards lavender blue, falls clear blue; Florence Barr, with both falls and standards bluish, with rosy lilac tinge; and Mons de Sible, with lilac standards and deep crimson-purple falls.

Some beautiful forms are embraced under the doubtful species *hybrida,* all with white standards, of which Duc de Nemours, with purple edged white falls; George Thorbeck, falls rich violet purple veined with white at base; Mrs. George Darwin, falls white, the upper part veined with gold and violet, are among the best.

The species *Iris Germanica* is, undoubtedly, more common than any other type, particularly in the older gardens. In this purple is the predominating color, and Purple King and Black Prince are the best representatives.

Iris Florentina, the orris root of commerce, is one of the most popular, and very deservedly so; for over a hundred years it has occupied a conspicuous position in every large New England garden, and during the period has lost none of its popularity; free blooming, with flowers of pearly whiteness, it annually leads the way to the charms of the early summer garden flowers. There are three forms, the common type just described, the variety *Albicans,* of a purer white, and Princess of Wales, even more floriferous, with slightly longer flowers and the most deliciously fragrant of any German iris.

The crowning beauty of all German irises is traceable to the blood of *Iris pallida,* the broadest leaved of all, with sword-like foliage often attaining a height of two and one-half feet and an inch and a half across the blade. The flowers are borne on long stems well above the foliage, altogether producing a most charming effect. The variety Dalmatica sometimes known as Princess Beatrice and occasionally in this country as Madam Almyra, is the finest, with immense flowers of a rich lavender blue and with a charming though subtle fragrance. Delicata is of weaker growth, with falls lavender, shading to white and French-gray standards. Hybridizing has not improved this species, as seen in the variety

Queen of May, which, while beautiful, with its soft, rosy-lilac, almost pink flowers, is a comparatively weak grower, though floriferous. The beautiful cross of the species with *Iris sambucina* shown in the variety Madame Chereau is an exception, however, and this is a most delightful flower, with its pure white petals richly feathered with lilac.

The varieties of German iris mentioned are but a fraction of those that can be purchased from horticultural sources; they represent, however, the best and among them are varieties far advanced in horticultural merit over many of the more common varieties seen. Of clear yellow German irises we have two species *flavescens* and *aurea*; both are good, the former attaining a height of three feet, with lemon yellow flowers, and the latter of dwarfer growth, with rich golden yellow flowers.

All of these irises with surface rhizomes are of the easiest cultivation, thriving in ordinary garden soils, requiring subdivision and replanting in reënriched soils as their clumps become large or the soil becomes exhausted. This replanting should be done as soon as the foliage shows signs of ripening and must not be delayed so long that they may not become thoroughly reëestablished in the soil before winter. In planting it is better not to sink the rhizomes over an inch below the surface unless the situation is naturally a very dry one. As the plants become established the rhizome soon assumes its proper elevation. Until of late few diseases troubled this class. Unfortunately, however, a seemingly microbic rot is found to affect the roots so that the foliage becomes detached from the rhizome. The disease is little understood and no remedy has been proved effective, though it is quite possible that overrichness of soil may serve to foster the disease.

The Jacob's Sword (*Iris Pseudacorus*) occupies an intermediate position. Never being classed as a German iris it is a beautiful plant to associate along water courses and yet will thrive admirably in ordinary garden soils; with ample dark-green foliage it makes a vigorous and healthy clump and bears abundantly of rich golden yellow flowers with a conspicuous orange zone on the base of the falls. Two types are common, one with narrower petals than the other. The Gladwin, or Roast-Beef plant (*Iris fœtidissima*), while pale blue in its typical form, in its variety *citrina* is of a clear

yellow, but the main interest in this centers in the ornamental effect of the bursting seed pods within which the fleshy bright orange colored seeds show to advantage.

Those irises with so-called tufted roots are represented familiarly by the Siberian and Japanese classes. The Siberian has a number of distinct forms of which the type is a tall leafy plant four to five feet high with many flowering stems bearing from three to five flowers to a stem, and with dark blue coloring marked with white pencillings. The two most useful forms, however, are the pure white variety which grows about two feet high, bearing purest white flowers in small clusters, an admirable plant for any flower border, and the variety *orientalis*, with broader, shorter foliage growing to a height of eighteen inches and bearing with wonderful profusion flowers of the richest blue with faint white throat markings. There is no better true blue in the iris family than this. It, too, is one of the few irises which will bloom a second time, though sparingly it is true, by cutting down after the flowering period. This can hardly be recommended, however. No iris reproduces itself any faster than this. It quickly forms broad colonies and necessarily requires frequent division and transplanting.

Japanese irises comprise, perhaps, the *par excellence* of the family; they are much misunderstood and require more judgment in their cultivation than do German irises. If planted in situations where water will not collect about the crowns in winter they are perfectly hardy. To flood them at the flowering period is an advantage, not a necessity. This need is nearly as fully met by thorough mulching to retain all possible soil moisture during the flowering period, and with artificial watering is far safer than to plant in a moist situation. It is a false impression that the Japanese plant them where they are subject to excesses of moisture in winter. During this period the Japanese iris fields are drained. All Japanese irises are seemingly improved and selected varieties, rather than hybrids. Their range of color is a very ample one, but has decided limitations. Aside from the variety of self colors and their combinations in flaking and veining, together with the single and semi-double forms, nothing can be expected. A dozen distinct sorts represent the class far better than a large collection of varieties whose distinction is more dependent on their labels than on any

visual evidence of variety. Probably no class of plants has been more cruelly foisted on the public as new than these, by means of fanciful names in which Japanese terms have been used as indicative of new sorts.

It is highly improbable that any distinctive improvement of the class has resulted in comparison with the first sets of varieties shown in our halls twenty years ago. The following list is probably no better than others that could be named, but possesses distinction in the sorts quoted. Arthur Silbard, double, white, shaded with violet; Blue Jay, single, clear blue, spotted with white; Calypso, double, lilac, richly veined with purple; Dagmar Georgeson, rich royal purple, single; Goliath, double, white, marked with violet; Emperor of Japan, double, velvety maroon; Gold Bound, double, white, margined with gold; and Painted Lady, single, white, veined with claret.

The wonderful size of the flowers of the Japanese irises, their late period of bloom, carrying on the flower effect to early August, renders the class indispensable to every flower garden. Massing them in groups of a single variety, rather than in promiscuous clashing of colors is, however, essential for the most artistic effects.

Discussion.

Mrs. E. M. Gill inquired how often it was necessary to transplant the iris.

Mr. Manning replied that it depended on the class; German irises should be transplanted every three or four years; the Japanese kinds every year or every other year. August is the best time to transplant them.

William N. Craig remarked that to have success with Spanish irises it is necessary to repurchase stock every second year; they cannot be grown successfully after the second year without new stock.

John Clark said that he had grown the various classes of iris and that after all it is the German varieties to which we must look for the best results.

In answer to a question concerning the best fertilizer for the iris Mr. Manning stated that ordinary manure fertilizers are satisfactory.

The ground should be of good soil, trenched to a depth of eighteen inches. If manure is not available commercial fertilizers can be used.

Edward R. Farrar asked if the Japanese iris could be grown on the border of a pond.

Mr. Manning replied that it should not be planted at the edge of the water but on the bank borders; a difference of a foot in distance from the edge is a matter of life or death to the Japanese iris.

THE POSSIBILITIES OF PEACH GROWING IN NEW ENGLAND.

BY ADIN A. HIXON, WORCESTER, MASS.

Delivered before the Society, January 19, 1907.

About three years ago I spoke before the members of this society on "My Observations and Experience in Horticulture," incidentally referring to the matter of the possibility of apple culture. The newspapers made so much of my talk that within a week or ten days I received fifty-eight letters, showing that we little know how much influence we have or how much interest there is in these things.

The peach is of Persian origin. Pliny says it has venomous properties and was sent to Egypt by the kings for revenge. Gerard says in 1579 that he had the peach in his garden. He says: "It soon cometh up, beareth fruit the third or fourth year after planting, and it soon decayeth and is of not long continuance."

As early as 1795 writers said something must be done to save the peach crops. In 1807 Judge Peters states that his father had large orchards fifty years before that yielded abundant crops and continued to do so for years with little attention. Then the trees began to sicken and die. He speaks of other orchards being troubled the same way by a disease that he later calls the yellows. His courage was good, however, and he kept on planting every year. He says: "Have had trees live twenty years, and have known trees twice that age, yet I think four or five crops is the average life. Have noticed that those on limestone soils and of that nature live longest. After two years of excessive rain I lost 150 trees. From perfect health they turned yellow and the bodies blackened. I grubbed out every one. I did n't venture to replace them with anything grown near but got them from afar. I promptly renewed everything on first symptoms of disease. I know of no more valuable fruit than the peach and always have a new plantation coming along

to renew the older ones." This writer of fifty years' experience thinks excessive moisture is the cause of the yellows.

All writers about this time mention a wasp that does a great deal of harm, and which proves to be the parent of the borer. A book published in 1797 mentions thirty-one sorts of peaches. A writer says the one called the Rare Ripe is about the only one worth cultivating, and within thirty years that had greatly deteriorated. He suggests if they were renewed by planting trees or stones from some other countries it would be well.

In 1803 some of the growers near Philadelphia recommended cutting back so as to make new heads with good success. Another writer says, "Be careful and not injure the roots. Do not use too much barnyard manure. Plant on high ground and on the north side of the slope." Mention is made of severe frosts every few years killing the buds in New Jersey, Delaware, and Pennsylvania.

In 1800 a writer from Leverett, Mass., recommends planting on sandy soil, bordering toward gravel, on the north to west slopes. He says, "After a few crops, cut back so as to renew the top and they will bear good crops." Another writer in 1822 says, "We are utterly destitute of nurseries or places, from Boston to Albany, to get trees or plants for our gardens." He goes on to state that he could only get wild strawberries, blackberries, raspberries, or whortleberries from the farmers.

Still another tells of his visits to his grandfather's place where trees and the ground were covered with peaches and the little trees were coming up so thick they had to be thinned out. Another one that visited his grandfather's place once a year, about peach time, remembered one tree at the corner of the house and what luscious peaches that tree bore. A few days ago a lady spoke to me of the luscious peaches of her girlhood days. I inquired how many years they had them, but she could not tell. The tree died about the time she married and there was no one interested enough to plant more.

I mention these facts to show that for the past hundred years or more there has been trouble in growing peaches, not only in New England, but in New York, New Jersey, and Pennsylvania, and that the peach is a short-lived tree and should be set out every few years, and that the reason of their doing well in New England was

that they were mostly a seedling peach of hardy varieties and those that reproduced themselves from stones and before the introduction of the borer and yellows. The fact that they have borers and yellows in New York, Delaware, New Jersey, and Pennsylvania, and frost in all of these states, even in Florida, the land of orange growing, should encourage us to continue, for we are no worse off than they are.

The possibilities of New England for agricultural and horticultural success are greater than any other part of the United States. First, because of its markets. In Massachusetts alone, there are nearly one hundred cities and towns with a population of 5000 or more, with a land area of about 8000 square miles. There is not another state in the country, outside of New England, that can begin to compare with it. It has a greater variety of soils than any other place.

Professor Shaler says, "New England is one of the most permanently fertile parts of the United States, made so by the steady and gradual disintegration of her rocks and drift formations." This is of importance considering the experiments lately made by experts connected with the Good Roads Bureau of the Department of Agriculture and the German scientists and investigators with the use of stone meal. One large grower in this vicinity says, "Peaches have been grown on our farm ever since I can remember and there has not been a year that we have not had them. The climate may be against us, but the yellows is the worst thing we have to contend with, although on the whole I do not think we are any worse off than they are in some other parts of the country."

Another advantage in favor of New England is that the fruit can be left on the trees until ripe. As a result the peaches have better flavor and color. Boston dealers say that the peaches grown in eastern Massachusetts are the finest in flavor and the handsomest in shape and color. I think we can grow peaches as successfully on our hilly lands as they do in New Jersey and Delaware. Another grower informs me that our worst trouble is to get trees true to name. The most reliable way, he thinks, is to grow our own fruit from healthy stones and bud from strictly healthy trees. Then you get what you want and a tendency toward the elimination of the yellows. I think it would be well to grow seedlings every year,

experimenting with a view to getting a variety that would be hardy and vigorous in its immediate vicinity at least.

A popular variety in the vicinity of Worcester and one that does very well is the Mountain Rose. The Greensboro is a very hardy one and you are likely to get peaches from that tree when all others fail. It is a clingstone. The past few years the Late Crawford has been a profitable one to grow. The Crosby is a hardy peach of good quality, but not as marketable as some. The Champion is longer ripening than most of the others. It does not color quite enough, but it is so vigorous and bears such large fruit that it is worth trying. The Foster is similar to the Crawford. The Oldmixon is a white peach and one of the standards of excellence. The Elberta is a good peach to look at, is hardy and vigorous, good size, and more of them are planted than any other. It sells well because it is showy, but it is of poor quality.

An important consideration in peach culture on a large scale is the selection of a location, one not affected by late frost in the spring or early frost in the fall, one where the buds will be the least likely to start early in the spring. The influence of climatic and atmospheric conditions has much to do with all vegetable growth, especially peaches. Extreme cold is not as bad as extreme changes, especially when wet. Sometimes large ponds or rivers have a beneficial effect, as well as elevations near the salt water. In all cases plant the trees on elevated ground with a northerly or westerly slope.

For soil the peach will adapt itself to almost any kind. The best soil is a sandy loam rich in vegetable matter. It will do remarkably well on stony soils. Very rich soils produce too much wood. The peach does well on rocky or ledgy side hills that are almost worthless for anything else. Land with much vegetable growth on it would be benefited by a good dressing of lime before ploughing and another before harrowing. I know of one orchard on gravelly knolls where the wood had been cut off, the brush burnt, then holes dug and trees planted. They are dug around every spring, fertilizer applied, the brush cut twice a year and allowed to rot on the ground. The trees do not make as much wood as some, but otherwise are very satisfactory.

For manures use a dressing of well-rotted stable manure once in two or three years, an occasional dressing of wood ashes, muriate

potash, occasionally nitrate of soda or nitrate of potash. Always keep your foliage of deep green shade, but be careful not to induce an excessive growth late in the season. Get your growth early in the season so as to have it mature before cold weather. Do not trim until spring, for each tree will be a protection to itself. Strong growing varieties on strong lands may be planted twenty feet apart; on lighter lands, fifteen feet apart.

When setting out the trees carefully trim all broken roots and cut the tree to two and two and half feet from the ground, removing all side branches. When planting examine carefully for borers. If there are any dig them out and apply strong solution of whale-oil soap with the addition of a small quantity of potash. Examine the trees every spring and again in July and August. The fruit should be thinned, as an over-production tends to weaken the trees, making them more liable to disease and insect pests. A good time for the thinning out is when the fruit is about the size of a small walnut, the latter part of June or in July, depending upon the varieties, early or late. The first two or three years beans or vine crops may be planted. Afterwards I would cultivate to keep the weeds down until the latter part of July or August 1, when peas, vetch, or crimson clover may be sown to serve as a cover crop or mulch through the winter, ploughing under in the spring to furnish vegetable matter.

A man starting peach growing would do well to notice what is being done in his neighborhood, and be governed somewhat by local growers as to varieties to grow. I believe in the possibilities of New England in many things, especially peach growing. I think those men who are putting so much time and money in the production of milk would find it much more profitable and enjoy life much better if they devoted their time and energy to peach growing.

Discussion.

Elmer B. Parker of Wilton, New Hampshire, spoke on the subject of the day substantially as follows:

"My experience in growing peaches is limited to a small section of southern New Hampshire, our farm being on the extreme northern limit of the peach belt. There are several towns near us where

peaches may be grown but only a few are making a business of it.

Success in peach growing depends on several things: First, *location*; we must get back on the hills to escape frost. Second, *soil*. But the most essential thing of all is the *man*. One must make up his mind to meet with some failures in any place, north or south; and the orchard must receive the usual care when we do not have a crop.

On an average we have two crops in three years and have now had three crops in succession. The past season, through some unknown cause, we had the only crop in our section and practically sold the entire production within four miles of the orchard; and this without any soliciting, only an advertisement in the local paper.

My father is the pioneer peach grower in our section. His neighbors followed suit but gradually dropped out of the game leaving him to master the situation alone, and he won. At the present time there seems to be a new awakening; farmers are going peach-crazy as they call it, but we do not fear competition, even if they succeed, for Parker's peaches have a reputation made by thirty years of honest dealing.

New England, as a whole, offers many advantages for peach culture over other sections. We have a good market right at our very doors. Fruit picked in the morning can be on the market in the afternoon, almost with the dew on it. We have low express rates compared with the enormous cost from the South; from our town to Boston there is a ten cent rate. We are gradually working up new markets to the north of us and, although we enter into competition with New York State and Connecticut fruit, our products find a ready sale at advanced prices over our competitors.

The cry has been that when the great orchards that are being planted throughout the country come into bearing peaches would be a drug in the market. Seldom, however, do all sections produce full crops the same year; then those that fail take the surplus of others.

Were it not that there are insects, disease, and careless planters, the peach business would be overdone. Just compare our lot with the growers of the irrigated lands of the West — Utah, Idaho, and Colorado — where land is high and a long distance from the market; yet they can put fruit on the Boston market, and at a profit.

Our fruit is superior to the bulk of that coming from the South; it can mature on the trees, getting color and flavor, if the right fertilizer is used; for you can breed flavor into a peach, good or bad.

Today we have more difficulties to overcome than we had fifteen or twenty years ago. The peach has now come to be a necessity with all classes of people, where it used to be a luxury. Peach growing offers a vast field for study and we have the Experiment Stations that are ever willing to help us over our difficulties in solving new problems. Beginning with the tree from the nursery we must give the most careful attention to all the details.

Peach trees talk to us through their leaves; their color tells the whole story; and the observing planter will soon notice any trouble and find the cause and remedy.

It is strange that people are not making the best of their opportunities. Where the peach can be grown it is more profitable than the apple, for it bears fruit when three years old. The Elberta is adapted to all sections and in my opinion it is the best market variety, the best for canning purposes, and is a very good eating peach.

I have an experimental orchard in which I have two hundred kinds at the present time. There are several varieties that are valuable for the market. I shall be glad to answer any questions as to my methods."

In reply to inquiries Mr. Parker stated that he had now two thousand peach trees which had been growing about fifteen years. During that time he had had three failures. He marketed last year 700 baskets; three years ago he had a crop of 2000 baskets. They brought from $1.00 to $1.50 per basket. In addition to Elberta he grew Early Crawford and Carman.

William N. Craig asked the lecturer to name desirable varieties for the Worcester County region.

Mr. Hixon replied that he was partial to the Mountain Rose; it is a small, nicely colored peach and suitable to put up whole in jars without cutting. The Greensboro, Champion, and Foster were also to be recommended. The Champion is a good home variety but it is tender to handle and liable to rot. It is imposible to put it on the market in good shape; it is too large. The Crawford is one of the best but it is rather tender. Both the Early and

Late Crawford are favorites for small gardens. The Waddell and Carman are newer varieties and not very well known in his region. The Coolidge Favorite is a good peach.

Wilfrid Wheeler said that it was possible to put flavor into peaches by proper attention to fertilizing. Stable manure, if used too freely, would spoil the flavor of peaches. He advocated harrowing the orchard twice a season; the second harrowing to be done in June. Crimson clover and vetch were desirable to plant as a cover crop and allowed to die down in winter, and fertilizing should be done in the spring instead of in the fall.

Monroe Morse, a successful fruit grower of Medway, Massachusetts, was called upon to give his experience in peach cultivation.

Mr. Morse said that he never practised grass culture of orchard. He had experimented on one acre for two years, but they did not grow as large as under open culture, and now he plows up the ground. He had used crimson clover several times but without much success. He had sowed also some vetch, but he depended mainly on barley, oats, and peas as a cover crop. He advocated nitrate of potash and Canada ashes for the peach orchard.

By request Mr. Morse has kindly furnished the following detailed description of his method of fertilizing the peach orchard:

"In fulfillment of my promise to write out in fuller detail the leading points of my remarks at the recent discussion at Horticultural Hall on peach growing, I think one of the things desired was a clearer statement of my reasons for using ashes as a source of lime for liming land. Ashes as I buy them from Canada are guaranteed to contain not less than 6 per cent total of potash and phosphoric acid; about 5 pounds of potash and 1 pound of phosphoric acid. These 6 pounds in 100 pounds of ashes may be fairly considered worth 5 cents per pound or 30 cents value in each 100 pounds of ashes. When bought in quantity the ashes cost me in Medway 45 cents per 100 pounds. Deduct the value of the potash and phosphoric acid and we have left 15 cents as the cost of the lime, about 35 pounds.

The lowest price at which I could get air-slaked lime delivered in Medway in large quantities was at the rate of 34 cents per 100 pounds. I do not think air-slaked lime contains more than 60 per cent of actual lime, 60 pounds to the 100, making the cost of

30 pounds of lime in air-slaked form 17 cents. In ashes I got about 35 pounds of lime for 15 cents. If I bought quicklime it would cost me about $12.00 per ton in Medway or 60 cents per 100 pounds. As commercial lime is not pure it is doubtful if 100 pounds would contain more than 90 pounds of actual lime, making 30 pounds of lime cost 20 cents, while in ashes I get about 35 pounds for 15 cents. As an additional item in favor of ashes I think the ash lime of greater value than stone lime. Also ashes are in far better condition for spreading than either air-slaked or quicklime.

But it is my present thought that the cheapest way to supply lime to the soil is to use basic slag as a source of phosphoric acid for the fertilizers. Slag carries from 30 to 50 per cent of lime, and the value of the phosphoric acid it carries will cover its whole cost.

In regard to nitrate of potash which I stated cost me about $90.00 per ton, $4.50 per 100 pounds, the exceeding richness of the chemical makes it the cheapest source for potash and nitrogen that I know. Each 100 pounds carries 44 pounds of potash, equal in value to the same quantity derived from high-grade sulfate of potash, in which form it cost me this season in Medway about $5\frac{1}{5}$ cents per pound. This 44 pounds at $5\frac{1}{5}$ cents comes to $2.28, which taken from $4.50 leaves $2.22 for the value of the 14 pounds of nitrogen contained in 100 pounds of nitrate of potash, or $15\frac{6}{7}$ cents per pound for the nitrogen which Prof. Goessman assured me is equally valuable with the nitrogen derived from nitrate of soda which costs me in Medway this season $58.00 per ton, or $2.90 per 100 pounds. 100 pounds of nitrate of soda contains about $15\frac{1}{2}$ pounds of nitrogen, making the cost of one pound of nitrogen in nitrate of soda $18\frac{7}{10}$ cents per pound. The difference in cost of nitrogen per pound in favor of nitrate of potash is $2\frac{8}{10}\frac{5}{0}$ cents, making the saving in 100 pounds of nitrate of potash $.399, or $7.98 per ton.

Nitrate of potash is not a fertilizer which can be used alone to advantage. The potash and nitrogen are not well proportioned and it is wholly lacking in phosphoric acid. To get a fertilizer such as I want for use in my peach orchard I mix with it Lobos guano, basic slag, and high-grade sulfate of potash.

My formula for this season's use is

150 pounds nitrate of potash
150 " Lobos guano

150 pounds high-grade sulphate of potash
750 " basic slag

1200 "

This gives me a mixture containing about

$2\frac{1}{10}$ per cent nitrogen
$12\frac{1}{4}$ " phosphoric acid, available
$12\frac{1}{10}$ " potash

and the mixture contains no chlorine which I consider injurious to fruit and to the land as it tends to make the land become sour. As this mixture contains a large proportion of slag which carries from 30 to 50 per cent of available lime, it will help to lime the land.

Now this will seem tedious to most persons, but I find such calculations necessary to enable me to decide intelligently what to buy to fertilize the peach orchard for the best results and the greatest economy."

Mr. Morse was asked if he sprayed. He replied that he would not get any fruit if he did not. For the San José scale he used 15 pounds each of sulphur and lime to 50 gallons of water.

Mr. Parker stated that he had no scale in his orchard and he sprayed with Bordeaux mixture.

Mr. Hixon called attention to the practice of planting peach stones for the raising of trees and advised against it. Although it was interesting as an experiment it would not pay commercially. He had tried it and had the trouble of pulling up the trees later.

Duncan Finlayson inquired if Mr. Morse had experienced trouble with borers.

Mr. Morse replied that he had trouble with borers; he painted the trunks with lime paint for he found the borers put in their work in spite of the spraying with lime and sulphur. He said that spraying with lime and sulphur accomplished two things; it destroyed the scale insect and it was also a remedy for fungi and leaf curl. One spraying served for both purposes. He sprayed once a year, whether the need was apparent or not, and should continue to do so.

Mr. Hixon remarked that the scale was not got rid of easily and advised making sure of new stock being clean.

William N. Craig inquired if any of the nurserymen present had ever used hydrocyanic acid gas in fumigation of nursery stock.

He had found it useful in the greenhouse to keep down the ravages of insect pests.

Mr. Morse said that he feared the use of it would be liable to kill the trees or injure the buds.

James Wheeler stated that he had used hydrocyanic acid gas in his greenhouse with good results and without injury. At one time his house was badly infested with mealy bugs but after treatment with this fumigant they had practically disappeared.

Mr. Craig further said that violets were very susceptible flowers but were not injured by this treatment. The only damage he had experienced was that the delicate tips of the maidenhair fern had been burned some.

Mr. Hixon observed that all cucumber growers used it in their houses.

Mr. Parker said that he would not buy any nursery stock that had not been fumigated when sent out.

Mr. Morse said that there was danger of injury to young stock by fumigation, and he would not take any risk as he would have to spray anyway.

On motion of Mr. Craig a hearty vote of thanks was extended to Messrs. Hixon, Parker, and Morse in appreciation of their valuable contributions to the discussion.

COLLECTING ORCHIDS.

BY JOHN E. LAGER, SUMMIT, NEW JERSEY.

Delivered before the Society, January 26, 1907.

There are many things intermixed with orchid collecting that to many people seem out of place; yet, often on these various things may depend the success of several months of labor.

In the countries where the orchids flourish everything is different from what it is in the northern latitudes -- climate, people, and the invariable lack of transportation, except by mules or oxen, or by canoes, or rafts on the rivers.

I particularly refer to conditions such as they are in South America. (The East Indies it has not been my fortune to see). Thus, in short, an orchid collector's life is not an easy one by any means; even under the best of conditions. There are, of course, several kinds of collectors; some have it or take it comparatively easy. There is, for instance, the man who is sent out by some house to secure a certain kind of plant; to get so many boxes full and return home. The locality in which to obtain the plants is possibly indicated to him, and the man as a rule follows the beaten tracks or highways to some town or village where he makes arrangements for a certain quantity of plants and returns home; the trip lasting six months; possibly eight or nine months. He has obtained the plants and let us hope they arrived at their destination in good condition and everybody satisfied. This kind of a collector is the one who has the easiest time, but he will know very little of the country, its nature, its geography and its flora in general, and he is not the man to find new fields. He will go where some one else has been before and opened up the way, if he changes place at all.

The other man is one who is in love with his work and one who wants to see the marvels of the Creator in all their splendor and to satisfy this desire he must undergo untold hardships. No beaten

tracks will serve his purpose, but he must plunge into the wilds on mule back, up and down streams and rivers, in canoes and rafts, and not unfrequently on foot.

In looking for new fields exploring the country is absolutely necessary. It is not enough to know that plants can be obtained, but the collector must know his territory, the lay of the country, its rivers, its mountains, and hence he must figure out how the plants can be moved, without which his labors will be in vain. To illustrate this I will mention an incident, on one of my trips. I had struck my *Eldorado* in the form of a virgin Cattleya district. No man before had ever robbed this forest of its jewels, and to the best of my knowledge no one has been there since. The plants and the varieties were superb, but the problem was how to get them out. The nearest I could get to a point from which I could get transportation with certainty was fifty miles; but from where I was I could strike the same river at a point considered not navigable in about six hours. I reasoned that if there was water in the river, even if there were plenty of rocks in it, and the current strong, I could float my plants down in *champañes* (large canoes), and I set to work accordingly. I packed my plants at night in bags and sent twenty-five or thirty loads down to the river where I had tents pitched. The mules were unloaded and returned for more, until I had the entire lot moved. Now commenced the real battle; I had to go down along the river a considerable distance and try and induce some of the owners of boats to come up where I had the plants, but as they had not done so before they reasoned that it could not be done. I was determined, however, and after considerable arrangement I succeeded in convincing two parties that it could be done, with the result that we started to ascend the strong current. I returned to my plants waiting for the boats for several days, when suddenly a freshet came rushing down the river, swelling it out of all proportions. I had the plants on a knoll near the river; in a few hours the water cut behind us and we were on an island helpless; we had to abandon our tents, the water eating gradually toward the plants; and it seemed a question of a few minutes and all would be lost. Suddenly the waters stopped advancing (this was during the night) and plants and all were safe. The boats were caught in the freshet and had to tie up to some

rocks, and as the water rose in the river they had to cut away trees and branches in order to save themselves. In the evening they arrived. We loaded the plants by candle light and started down stream early the next morning; everything went well, our *champañes* racing down the rapid current like feathers, missing stones or rocks by inches or less, but the net result was that I got the plants out.

Now, in working on these lines, the collector will get a fair idea of what the country is like, and in no other way. He will also know where and how most species grow, so that he can at any time put his finger on the map and point out where the different plants occur.

A very important matter for a collector in getting any kind of orchids is to find and select a good central place to serve as a base for his operations; a place as near to the mountains as possible and at the same time a place from which the plants can be moved when packed without too much expense. It is also important to know that the varieties are good, as a shipment of plants of a poor type costs as much as that of a good type. To ascertain this will sometimes consume considerable time, but it pays as a rule.

For a base, any old building or ranch will do; if none is to be had one must be built in which to store the plants, make boxes, etc. Personally, however, I very seldom used buildings for this purpose owing to the fact that in most instances I was in places where none could be had. I had large tents made and when these were not large enough to accommodate everything I bought cotton goods and mounted a skeleton of stakes and bamboos in the shape of greenhouses. Over this I stretched the goods, one piece overlapping the other, in order to shed water. This kind of structure I found to be very good in more ways than one, and I could work independently and be close to where the actual collecting was going on.

As soon as the base is selected lumber must be secured. This is a tedious operation, as it is cut by hand, and arrangements for it can not begin too soon. In places where I found it impossible to procure any, on account of scarcity of men to saw the logs into boards, I used coffee bags cut open and put two of these crossways in a box without bottom, the box to serve as a form; then placing a good layer of palm leaves in the bottom I packed the plants in layers very firm and at the top as a last layer more palm leaves; then drew the bags together and sewed them with string. When

taking the box away there remained a square firm package. In this way I moved the cargoes considerable distances to places where I could pack the plants in wooden boxes.

I will speak of the various South American countries chiefly as they are the home for all of our Cattleyas. These orchids occur all the way from Honduras, Guatemala and Costa Rica in Central America, and down through Colombia, Venezuela, Ecuador, some in Peru, and again in the Guianas and Brazil.

The collecting of the orchids and the preparing and packing them for shipment are more or less the same in any of the South American countries. Men are sent out in every direction, covering as large a territory as possible, in order to secure the plants in the least space of time. As a rule two or three men band themselves together, and take provisions enough to last a week or more. They are armed with the indispensable *machette*, and axes occasionally, also with shot guns; and carry string bags in which to bring out the plants. These men bury themselves in the woods, and when plants are sighted the trees are as a rule cut down, unless the plants are found quite low down. To climb the trees is no easy task in the tropical forests where there is a network of climbers and other vegetation around the trunks. There is also the possibility of poisonous insects, snakes, and scorpions being hidden in the plants; hence very few men will undertake the climb; but, whatever mode is chosen, the plants are loosened from the trunk or branches by running the *machette* under the plants; when once loose they are tied together with some kind of string, put in the bag, and the march continued until another plant is found. Towards night the men return to their camp, where the plants are spread out under some tree to protect them from the sun, and at the end of the week's labor the plants are carried on their backs to the ranch. Here they are spread out on shelves made of stakes to await the proper time for the packing.

The most interesting and most important fields for collectors are, undoubtedly, Colombia, first; second, Venezuela; and third, Brazil.

I place Colombia first because I believe its flora has no equal in the world, and taking the orchids especially I doubt very much if another region can be found where such great numbers of species occur.

We find in Colombia eight different kinds of Cattleyas, namely: *Cattleya gigas*; *C. gigas Sanderiana*; *C. chrysotoxa*; *C. Chocoensis*; *C. Trianae*; *C. Bogotensis*; *C. Mendelii*; and *C. Schroderae.*

Cattleya gigas has a very large territory scattered over several mountain ranges of Antioquia; in some localities the types are superb, to say the least, while in others they are poor. In a few isolated places the beautiful *C. chrysotoxa* occurs, but in such small numbers that collecting it would not pay any longer. This Cattleya grows on the lower slopes of the mountains in warmer places than *C. gigas*; also somewhat in shaded positions. *C. gigas* is found in perfection on grand solitary trees; here they always place themselves in such positions on the trunks or heavier limbs that they may obtain the full benefit of the breezes; also the sunlight; yet some branch will afford them sufficient shade from the sun sometime during the day, as to make their abode a perfect one.

I have seen this Cattleya climb up the mountains until actually stopped by the cold; the plants in such localities are as a rule stunted. Struggling as they do for an existence, the front part of the plant somehow will push out new leads repeatedly, while the bulbs behind lose their leaves and die off. Then again they are found descending the warmer slopes and in a few places join hand so to speak with *C. chrysotoxa*, and in such localities natural hybrids occasionally occur.

This particular region I found to be exceedingly interesting in orchids. The Andes or the part of the same called the Cordillera Central are here simply a maze of spurs and ridges in every direction forming great canyons, valleys, hollows, and precipices of every imaginable shape, and where every kind of climatic conditions prevails, from the torrid to the cold *paramos.* The trails run along the mountain sides, in some places at appalling heights, in places so dangerous that the only safe means of locomotion is to dismount and walk. But to return to the orchids again; what a storehouse this is for the orchid lover. In the lower hollows may be seen large patches of *Peristeria elata* in perfection, with bulbs of enormous size, and flower stalks six to ten feet high; then again a few *Miltonia Roezlii*; somewhat higher up is *C. chrysotoxa* modestly tucked away on a branch of a tree; and *Oncidium Kramerianum* nods here and there in more exposed places.

As we ascend higher we find the majestic *Cattleya gigas,* and still higher up we have a veritable botanical garden; among others we find here in great profusion *Miltonia vexillaria* (*Josephita* or *pensamiento* as this plant is called here). There are also Lycastes in variety, Sobralias, Oncidiums, Anguloas, Odontoglossums; and Rodriguezias and Masdevallias in great varieties along the trail. On the banks and rocks, exposed to the full sun, the pretty *Epidendrum fimbriatum* grows in masses, the effect of which reminds one of our *Phlox subulata* in the spring. Many more could be mentioned but time will not permit.

From this region we will move southward going by mule back the entire length of Antioquia, following the highway leading almost exclusively over a high plateau with pretty towns and villages along its course. After twelve to fifteen days' riding we arrive at Cartago in the Cauca, situated at the foot of the Central Cordillera on the western side, and by traveling along southward a day or two more, we are right in the heart of the home of *Cattleya Chocoensis.* This Cattleya unlike most of the others occurs in forests on level land which is very swampy; the trees are as a whole small and stunted and overgrown with moss. Here, strange to say, I saw the most beautiful sight it has been my fortune to see; in these jungles the plants grew by the thousands; the trees being literally covered with them and in full bloom (end of August). I particularly remember that I got my mule under a tree and sitting in the saddle picked a large bunch of flowers; these were particularly fine and large, so different from what we see them under culture where they only half open. The treatment we give this plant under cultivation probably has something to do with this. Where they grow it is very warm and humid. I noticed in the early morning as soon as the sun reached the forest a dense mist would rise from the ground and envelope everything; this would gradually disappear as soon as the sun became stronger.

The western slope of this Cordillera is not abundant in orchids. I made explorations all along going up several rivers and cañons, but with poor results. In one place I found five plants of *Cypripedium caudatum Wallisii* growing on one tree. I thought I had found a "bonanza" and the result was three weeks' constant labor and marching from one place to another, but not another plant could be found.

On this same trip I also found a most gorgeous Masdevallia, the flowers very much like *M. Veitchii,* but larger and finer in every way; its leaves were long sword-like and glaucous in color, some measuring twenty-four inches in length. I found about twenty plants of all sizes in one tree, but not another plant anywhere. As misfortune would have it these plants never reached home alive. Some time after this I rediscovered it a considerable distance further southwest towards the Pacific and gathered quite a number of plants, packed them and forwarded them to Buenaventura. There they were retained for nearly two months on account of quarantine regulations and were consequently lost.

While in the Cauca, by crossing the valley westward, we find on the western Cordillera along the Rio Dagua the chaste *Miltonia Roezlii,* in fact this is its home. True it is scattered here and there along the course of the Rio Cauca through the Antioquian Mountains, but not in quantity. Here along the Rio Dagua it grows *par excellence.* The climate is extremely hot and very moist, in fact it rains pretty nearly every day in the year and water oozes out of the rocks everywhere. On the ledges and rocks large clumps of *Cypripedium Roezlii* may be seen in luxuriance. Leaving the beautiful Cauca valley and its mountains we will cross the Central Cordillera and steer the course towards the State of Tolima. We will do this by a southern route, instead of crossing the Quindio as is customary, and in this way we will take *Cattleya Trianae* by surprise in its southern haunts. The trail leads over a very inhospitable region, cold and dreary. The forest along the highest part of the road consists of shrubs and stunted trees covered with moss. For long stretches trees and shrubs give way to grasses and the inseparable companion of the high plateaus a giant Gnaphalium.

Along certain ridges on the trail, in clumps of trees, I noticed *Masdevallia racemosa* in full bloom; these grew in the thickets in semi-darkness and I am sure that the rays of the sun could never penetrate to their retreats, yet here they flourished unmindful of the cold and dreary atmosphere and darkness. Masses of scarlet and red colors could be seen when peeping through the thickets. Finally we have crossed the *paramo* and the descent begins through a labyrinth of gorges and precipices and at length we are down on the lower foothills on the eastern side of the Central Cordillera

where any moment we can expect to get a glimpse of *Cattleya Trianae.*

In the extreme southern part of Tolima the three chains of Andes are very close to one another, and owing also to the continuous rise of the country from the Caribbean sea southward, we find here *Cattleya Trianae* scattered everywhere; on the lower mountain sides, in the valleys, in hollows between grassy hills, or in fact in any place where there are clumps of trees. The variation of types is very great. Every little valley or stream has its own particular type, but owing to the long distance to a place of shipment these plants will be undisturbed for some time yet, or until everything within easier reach is exhausted.

In moving northward we gradually descend and the plants disappear from the valleys proper and follow the mountain sides and its indentations at an elevation of 2500 feet to 4500 feet above sea level. It persistently follows the mountain slopes at this elevation for about 400 miles and possibly more.

The gathering, packing, and shipping are more or less the same as with other Cattleyas.

Further northward we come to Ibagué, famous for being the first place where *Cattleya Trianae* was collected. At the time I was there very few plants were left in the mountains, but along the Rio Combeima which flows through Ibagué I found quite a few plants, but not enough to gather in large quantities.

In about one day's riding southeast from Ibagué, at a little village called Miraflores, I came across plants in sufficient quantity to gather a good shipment. The varieties were superb but I found it very difficult to get the plants out, and the only solution consisted in moving the boxes on mules' backs to a small stream that owing to the rain had swelled to a considerable size. Here I built small rafts, about three and one-half feet wide and long enough to hold nine or ten boxes in single file. Each raft was manned by two men, one at each end, and when everything was ready we cut loose. The stream being full of large boulders, projecting rocks and branches of trees, it was a most perilous journey, and more than once we had close calls, but everything went well and we reached Rio Chili. From the latter we emerged into Rio Saldaña which is a very large river. Here we tied all the rafts together, and then floated down towards the Rio Magdalena and on to Honda.

Before leaving this region I want to show you a little of the country around Miraflores. There are no valleys here to any extent, mostly high hills, with depressions between, also narrow openings along the streams. There are also a number of treeless hills covered with grass. On some of these I saw some of the most beautiful sights. The entire hills from foot to summit were literally covered with *Sobralia violacea* in full bloom, in all shades from pure white to dark lavender. The best time to see this show was in early morning, before the sun became too strong; with the night dew still lingering on the foliage and with the galaxy of colors on such a large scale, the sun finally rose higher and higher reflecting the colors in a way impossible for me to describe. Towards midday thousands of flowers began to drop off. This continued throughout the day, but early the next morning there was a new display. At the foot of these hills where the soil was rich and the plants partly shaded by trees they attained five to six feet in height. In ascending the hills the plants gradually diminished in height, until at the top they were only a few inches high. There was no difference however in the size of the flowers. Almost on the naked rocks would grow the beautiful *Epidendrum Ibaguense*, also *Vanilla planifolia*. This latter one always seeking the companionship of a dwarf shrub, to which it would cling, and display its fine dull yellow Cattleya-like flowers.

In crossing the Magdalena River going northeast we find *Cattleya gigas Sanderiana* in the state of Cundinamarca. This Cattleya is without a doubt the grandest of all the South American Cattleyas. The enormous size of the flowers and as many as ten on a spike is a sight worth seeing. Unfortunately this Cattleya is not at all plentiful and its territory is very small, that is to say of the true type, for on the same mountain chains towards Muzo there are quantities of plants but the type is inferior in every way.

In this same vicinity growing in somewhat warmer places than *C. gigas Sanderiana* we find along the streams *C. Bogotensis*, although not in quantity; also several Stanhopeas, Oncidiums, etc. Still further northward in the State of Santander we find *C. Mendelii*, unfortunately very sparingly. It occurs in several places but the long transportation is a very serious drawback. In addition to the plants being scarce the distance to the Magdalena River is con-

siderable, and I doubt very much whether this plant has ever paid to extract. In this same state at higher altitudes, *Odontoglossum Pescatorei* occurs, also several fine Masdevallias such as *M. Veitchii*, *M. Harryana*, etc. Also the pretty *Oncidium cucullatum*, Anguloas, and many more. From Santander I will take you across the Eastern Cordillera to Los Llanos de Cazanare. From where we are now, say in Malaga, we can cross the Cordillera in a straight line, but it will take us at least fifteen days, if all goes well, before we can set foot on the eastern side of the mountain. Four or five days of this time will have to be spent tramping eternal snow, so we will take a route further south where the elements are more favorable. The trails, however, are abominable and the journey a hard one, so we will simply place ourselves on the other side in the immense and grand region of Cazanare. This region where we now are is without the slightest doubt the most wonderful on this entire hemisphere, if not in the world. Everything is here on such a gigantic scale as to inspire terror in a man; its flora is marvellous; plants occurring in other parts of the country are as pygmies compared to those found here; and even the animals are much larger than in the other parts. There are giant tapirs, pumas, and leopards in the forests; the rivers are full of fish, alligators, rayfish, electric eels, etc.; and millions of waterfowl, etc. Here it is we find *Cattleya Schroderae* in all its glory. The first plants were taken out of this region in 1893; so it is, comparatively speaking, a virgin region; and will remain so for some time for many reasons. *C. Schroderae* is today the most abundant of all the Colombian Cattleyas. It is found from about the 3° northern latitude up to about the 7° but, like *C. Trianae*, it runs along the lower edges of the woods. The plants are of extraordinary vigor and size and the varieties are superb, compared with those of the older district of Villa Vicencio where plants are still gathered, it being a less risky region.

When the collector goes into the Cazanare he takes his life in his hands, so to speak. The only practical way to transport the plants is by rivers and there are a good many of these that can be utilized with more or less success; another thing to be reckoned with here is the seasons. Unlike the rest of the country we have here a six months' rainy season and a six months' dry season, with more or less variations, and here it is that several have failed who

have tried to collect in this region. When the dry season is fairly advanced most of the smaller rivers dry up, even the larger ones become unsafe for navigation, and if the collector is unfortunate enough to be overtaken by the dry season in his journey he will be stranded somewhere in the wilds without any hope of rescue. On the other hand, during the rainy season, he cannot collect the plants for during that time everything is inundated; the course of most of the rivers is gone and all appears like an inland sea. The plants must be collected during the dry season and everything in readiness at the first sign of the rains. If he can thus calculate all to a nicety everything is likely to go well, although the greatest dangers and risks are ahead on the rivers. Several of these may be used but whichever course is chosen the trip is a long one. He may take Rio Cazanare, if he collects in that vicinity; from this river he emerges in Rio Meta and from the Meta into the mighty Orinoco. On his downward journey he will find two rapids, Trapichote in the Rio Meta and the great waterfalls of Cariben in the Orinoco. If the rafts are strong and fortune favors those on board they will emerge safe, but in all likelihood more dead than alive; and no one on board will know how it was done; and it is also possible that the collector will have to risk it alone, for while he can get men from certain places along the rivers, they will as a rule balk when Cariben is reached. There are also other dangers; certain territories through which our course lays are infested with wild Indians. The lower part of the Rio Cazanare is badly infested with them. The name of the tribe is Curvas (Cazanare Indians). They are very hostile to the white man and will attack him with their bows and arrows whenever they have an opportunity, and the only way to avoid conflict is to keep the course in the middle of the river and without tying up at night. It also goes without saying that here if ever the collector must be well armed. On the Rio Meta we find the Guahibos or Meta Indians, and lower down the Yaruros or Orinocco Indians.

Once we are below the Cariben, dangers such as rapids are over, and if the collector succeeded in keeping a few men on the raft he will now float down slowly towards Ciudad Bolivar, but if he is without help to manage his rafts and battle against the trade winds he will have no easy time. He may be fortunate to be seen by some steamboat and taken in tow; if so he is safe.

Once in Ciudad Bolivar, if the plants are alive they can be embarked there for New York; the trip by that time will have taken about three months, so you see it is no child's play.

Now we have taken in all the Colombian Cattleyas and I would like to say a few words in regard to other orchids and their distribution. *Odontoglossum crispum,* as we all know, is associated with Pacho San Cayetano and other points around Pacho, in such a way that people do not seem to believe that *O. crispum* can be found elsewhere, but it is safe to say that not over twenty-five percent. of all the plants imported these last few years come from Pacho, for the simple reason that they are not to be had in such quantities any more, and before long the collector will have to look for other fields.

In my travels I made explorations all along the Eastern Cordillera for this purpose, as far South as Garzon, in the south of Tolima, and on the Central Cordillera as far as Pasto, with the result that I found *O. crispum* in several places on the eastern chain, and on the central chain in two places. Far apart, it is true, but in all likelihood I missed a good many places. I must admit I never found any great quantities, until Pasto in southern Cauca was reached; here are any amount; but of the type called *Lehmanni* with the characteristic five spots on the lip. *Miltonia vexillaria* is another plant whose home is Antioquia, yet a few plants have been found in Tolima, and then we lose sight of it again, to reappear in a slightly different form in Ecuador, under the name of *M. vexillaria rubella.*

Another great genus of plants in the Colombian Andes is the Masdevallia; Sonson, south of Medellin, is the region for these; here these plants occur everywhere in all shapes and colors.

Venezuela has four species of Cattleyas, namely: *C. Mossiae, C. Percivaliana, C. speciosissima,* and *C. Gaskelliana*; the two first mentioned are found in the Cordillera de los Andes. *C. speciosissima* is found in the Cuspanera Cordillera and *C. Gaskelliana* in the northeastern part.

Going down southward to the Guianas we find *Cattleya Lawrenceana* in the Roramia Mountains, and further south in the mountains above Pernambuco in Brazil the well-known *C. labiata.*

In looking at the map it will occur to some one to ask if there are not plenty of orchids in the immense territory lying between the

Orinoco on the north and the Amazon on the south; the western boundary would be the eastern Cordillera in the west, and the Atlantic Ocean on the east; including such rivers, as the Rio Negro and its tributaries, Rio Guayabero, Rio Meta, etc.

Cattleya Schroderae is probably the only Cattleya of any account in this region, although the greater part of this country is still practically unknown; but what is known has not produced anything surprising in orchids. Almost the whole territory is very uniform in climatic conditions, and without any high mountains, so we can reasonably expect that no great novelties are in store for us here.

Cattleya Eldorado is found in quantity along the northern banks of the Amazon beginning at Manaos; also along the Rio Negro; *C. superba* is also found there. This Cattleya also occurs in several other localities, such as on the Cazanare, Rio Meta, Orinoco, and even south of the Amazon, while *C. Eldorado* does not cross the Amazon southward.

In conclusion I would say that the prospects for future orchid collecting are not bright; the constant hunting for these plants the last few years has led a number of natives to embark in the exportation of orchids which is in itself nothing wrong, but unfortunately it is done in many instances by individuals who do not have the least knowledge of plants, or how to do the work right. The result is that the last year alone several hundred boxes (of Cattleyas mostly) arrived in New York, the most valuable part of which was the boxes; the plants through careless handling in every way were ruined completely. This in one year does more harm than the collector would do in ten years.

From Brazil now comes information that *Cattleya labiata* is getting scarce; a plant that we were led to believe would last to the end of time, and before long I fear that we will hear the same complaint from other quarters.

THE RENOVATION OF AN OLD ORCHARD.

BY GEORGE T. POWELL, GHENT, NEW YORK.

Delivered before the Society, February 2, 1907.

There are few subjects of greater interest than that of the old orchard. The old orchards are a source of great beauty; year after year they come out in all of their glory and in beautiful and fragrant blossoms, with the promise of abundance of the best of all fruits; yet we are in danger from the influences of diseases and the introduction of many new insect pests of losing these interesting and beautiful landmarks.

The first planting of orchards in this country was done in New England, and there are nowhere to be found more old orchards than in this portion of our country.

In the renovation of an old orchard the methods to be employed will depend upon the conditions that surround it. When the orchard is planted on land that may be tilled and upon which spraying machinery may be used it will be of great value to give it cultivation. The most of these orchards have been and are yet in sod, and for many years grass has surrounded them, and has been contesting both the plant food and the soil with the trees, and at a time when the trees required both to carry on their best development in advancing years.

I can perhaps in no way better outline the policy to be followed in improving the old orchards of New England than to give the methods that are used at Orchard Farm, where I have an orchard that was planted by my father sixty years ago, and which at the present time seems to be in the height of its greatest usefulness and value.

This orchard of two hundred and fifty trees was kept under cultivation for nearly a quarter of a century after being planted. Corn, potatoes and other crops were grown among the trees, thus giving

them good continuous cultivation. Then for another quarter of a century the trees were allowed to stand in grass, or in sod, the grass being cut a portion of the time for hay, then followed afterward as a pasture for pigs. Ten years ago I found that the trees were beginning to show some signs of decline and the fruit growing considerably smaller in size, and bearing less in quantity; I determined to plow the land and put it again under cultivation.

In plowing an old orchard that has long stood in sod the work should be most carefully done. It will not do to cut the roots of such trees severely for it will result in causing a check to the trees. The land in this instance was plowed in not more than three to four inches in depth. The object was not to attempt to turn a furrow but rather to break the sod; this was followed by a spring tooth harrow, which loosened and tore the sod in pieces, and in time made the soil loose and fine.

The following season the orchard was plowed again, very shallow, early in the spring; it was also cultivated with the harrow until about July 1st, when we sowed crimson clover. This was done for several reasons; to incorporate in the soil a large amount of humus or vegetable matter which it needed. This is one of the great needs of our orchard soil — more vegetable matter. The second object was to enable the soil to better conserve and utilize its moisture and to add to it in its best and cheapest form, nitrogen, which is the most essential element of food for old trees, for it stimulates new growth.

My first attempt in getting a growth of clover was somewhat disappointing, and had I stopped with the first year's results the system of clover culture, which I have since carried on extensively and which has been so successful and satisfactory, would have been a failure. I kept on sowing the seed each year until I now have no difficulty in getting a good growth, almost regardless of the character of the season. The chart upon which is shown the timothy and clover plants presents a most important lesson. The timothy, red top, and native grasses generally found in the orchard, as is shown by the illustration on the chart, have a system of fine surface feeding roots, which consume an immense quantity of water from the soil daily. We have but slight conception of the amount of water which is required for an acre of grass each day; it is over one hun-

dred tons, therefore is it any wonder that the old trees fail and go into decline when they reach the age of from thirty to forty years, when they are daily robbed of an amount of water to this extent, and at a time when they require it for the formation of new wood, the development of new fruit buds, and for the maturity of their fruit.

From the time that we broke up the sod in this old orchard and began the clover culture the trees have taken on new life, for they made new growth and have borne the largest and most profitable crops in their history. For the past two years the fruit from this orchard has been of such high quality, in such varieties as the Spitzenburg, King, Northern Spy, and Jonathan, that it has been sufficiently good to be packed in bushel boxes and has readily sold at the rate of $10.00 per barrel.

On much of New England soil clover does not take or grow well. While this is true it does not follow that it cannot be grown; with more than two centuries of great production, the soil is somewhat depleted in both its plant food and humus. Certain organisms in the soil necessary to the nourishment and growth of the clover have been worn out, used up or are practically lost, and this is the reason why clover, in these later years, has so generally failed to grow.

Under this system of clover culture the tillage of the orchard is done in the early spring and summer, when the trees naturally make their growth. The growth of apple trees is made, practically, by the 1st to the 10th of July, according to the season, while from that time on through the autumn the maturity of the wood and the development of fruit buds are accomplished. By sowing the clover seed about the 1st of July it begins to germinate and cover the soil by the 1st of August, and as the clover grows it aids in checking to some extent the continued growth of the tree, which is most desirable for the better maturity of the wood and the most perfect development of the fruit buds. The tap root of the red clover goes down deep into the subsoil and brings up the potash, phosphoric acid, and nitrogen that lie far below (in the subsoil) where the plow and cultivating implements cannot reach, and in the decomposition of the clover roots these fertilizing elements are left near the surface where they may be utilized.

Another great advantage from the clover is the winter covering it gives to the soil and the protection it affords against frost in its effect upon the roots of the trees.

There are certain organisms that must be present in the soil upon which the clover is dependent for its nourishment and which in turn are nourished by the clover plant. It is in the decay of these organisms that nitrogen is produced, the element that is so essential in making new growth of wood upon which the best fruit buds are produced. Clover has the ability or power to take the nitrogen from the air, and, in connection with these organisms in the soil, builds upon its roots the nitrogen necessary for its own use, and to leave a surplus in the soil for the use of other plants, or for the future use of the trees. Scientific discovery has brought to us a very great aid in a process for manufacturing nitrogen bacteria, which may be introduced to the soil artificially. A number of years ago this discovery was made in Germany, but the process of making a pure culture was not perfected and failed to a large extent. Our Department of Agriculture took up the work later, and while it obtained some very excellent results in sending out this inoculating germ, it, too, failed at the point of making a pure germ and transmitting it to farmers in an uncontaminated state; other forms of bacterial growth sprang into life and the germs necessary for the nourishment of the clover were found, in many instances, to have been entirely destroyed.

A recent method has been adopted by a scientist in New Zealand who has succeeded in not only obtaining a pure and uncontaminated germ, but has also a perfect system of transmission that will insure vitality when received by farmers.

The process consists of putting a certain portion of these germs, which are in liquid form, into a small quantity of water and sprinkling the same over seeds of plants or a certain amount of soil, which is afterward sown or distributed over the land. The inoculating germs at once spring into life and multiply in hundreds of millions, and thus nourish the clover until its roots may become established and take plant food from the soil.

I now sow for the purpose of soil improvement eighteen pounds of crimson and red clover seed in equal parts to an acre. The crimson clover being an annual plant will grow faster and make quicker covering, while the red will hold through the winter much better.

We like to have pigs in the orchard, for they thrive on the clover and do not eat it off so fast nor so close as do sheep. Where they may be allowed to live on the clover and apples the finest quality of bacon is obtained, and when they are fed upon corn in the autumn no finer quality in pork can be made.

In connection with the plowing of old orchards pruning is necessary. The trees are often overgrown with wood that has accumulated for many years and this should be judiciously thinned. All dead or enfeebled wood should be cut out; all cross branches or those growing in the center of the trees should be removed. This will cause new growth to start, new fruit spurs will be developed, and upon these will be borne exceedingly choice fruit.

This operation of pruning should be carefully done, and at least two or three years should be taken to change the tops of overgrown trees and to thinning out their branches, as too severe pruning at one time checks the trees too much. Wherever the orchards are on land that may be cultivated there will be found great advantage and a large increase in the quantity and finer quality of the fruit. Along with the cultivation of the soil and the pruning, spraying of the trees will add much value to them. Bordeaux mixture, when properly applied improves the foliage, gives tone to it, and thus increases the growth of wood; with the improved foliage the fruit buds are better developed and the quality of the fruit much improved. Perfect foliage is most essential for prolonging the life and value and the usefulness of our orchards.

There is much yet to be learned about spraying and the strength of materials to be used. The condition of the weather has to be taken into account, as to its being wet or dry at the time of spraying; these are points that will need to be most carefully studied, for of late more or less injury has resulted from spraying materials, in spotting the foliage and in more or less of discolored fruit. We are now using three pounds of sulphate of copper and four pounds of lime in fifty gallons of water; the old formula, used for many years, called for double the quantity of sulphate of copper, or six pounds. This lighter solution seems to be quite as effective in its destruction of the apple-scab fungus, which is the chief enemy of both the foliage and fruit of our trees.

It is very important to observe the right method in making Bor-

deaux mixture. The materials should be dissolved separately, each being put into twenty-five gallons of water, then poured together into the spraying tank or barrel; by this method of pouring the diluted quantities together there is a perfect chemical combination made, which is effective as a fungous application. Many dissolve the lime and copper in smaller quantities of water, put the two together in their concentrated form, and then pour the water upon them. This is a mistake and is responsible for much of the failure of the control of fungus among our trees.

For insects arsenate of lead is one of the best materials to use; this does not injure foliage and it adheres better than Paris green, while it is equally as effective in killing insects. We use two pounds of arsenate of lead to fifty gallons of Bordeaux mixture, and are adding to this one-quarter of a pound of Paris green; a weaker solution would be as good for the fruit insects, but there are such increasing numbers of caterpillars that devour foliage that a stronger mixture of the arsenate of lead with the Paris green is safer to use, as it will protect the foliage from almost any class of caterpillars that come over the trees.

The adhering quality of arsenate of lead was forcibly illustrated at Orchard Farm in the spraying of a large plantation of currants. The currant worm appeared in great numbers very suddenly, upon a Saturday, and it was necessary to spray this large plantation on Saturday afternoon, as to leave the work over Sunday meant the ruin of the foliage of the currant bushes. The spraying was done, but in an hour there came up one of the heavy showers which completely drenched the foliage and it looked as though the entire work would have to be done over again on Sunday morning; but, by nine o'clock the worms began to show evidence of hanging down from the leaves of the plants and by Monday morning they were all upon the ground, dead, and the bushes uninjured; had we used Paris green it would all have been washed off by that heavy shower.

The first spraying of orchards should be done as soon as the blossoms have fallen from the trees, and again in from ten to twelve days; the spraying should be done promptly and with great thoroughness, for the first fruit forms quickly. The calyx on some varieties closes very soon after the blossoms have fallen, hence to save the fruit from the codling moth this work must be

promptly done. The larvæ of the codling moth crawl into the calyx and if that is closed before the spraying is done the spraying has no effect upon the insect. In ten or twelve days the fruit from the later blossoms will be at the right stage for spraying, when the work should be done again with great thoroughness; two applications will give from 90 to 95% of perfect fruit.

The illustration upon the chart shows the codling moth which is a night flyer; it comes forth from its hiding place which is under the bark of the trees, in barrels or fruit boxes, or from fences along the orchard, and flies through the trees as the blossoms begin to fall and deposits its eggs. In a few days the larvæ come forth from the eggs and continue making their way to the calyx end of the apple and then burrow into the apple, remaining there several weeks when the apple falls to the ground and the larvæ go out of the apple, and spin their cocoons, in which they pass the winter. The curculio which is also shown upon this chart is another fruit pest. It not only attacks plums, but in recent years it has attacked our cherries, peaches, and apples; it has been found that Bordeaux mixture will repel this insect; it does not destroy it for it does not eat of the foliage or the fruit, it punctures the skin, so that it will not grow together at this point, and deposits its eggs in the cut; the young larvæ hatch from the eggs; which in time cause the fruit to fall to the ground. This is why so frequently that peach trees which have blossomed very freely, will have, in a few days' time, no fruit upon the trees; it has all been cut by the curculio, the young fruit weakened and fallen to the ground.

It will not do to spray plum and peach trees with Bordeaux mixture after the foliage has fully developed, as it will very seriously injure it.

The apple tent caterpillar is one of the chief enemies of our apple orchards, and to a large degree is responsible for the decline of many of the old, as well as the young orchards. When all the foliage has been stripped by this or the canker worm, or any caterpillars that completely destroy the foliage for several years in succession, the trees will be so weakened it will require a number of years for them to recover, and in many instances they go into a permanent decline. The arsenate of lead and Paris green are effective in keeping in check the caterpillars of various types, as they are easily

destroyed when they are young, and it will quite effectively prevent their doing injury to the trees.

The illustration on the chart shows the moth which lays its eggs upon the small twigs of the trees, which may be readily seen, as their varnished covering glistens in the sun. At Orchard Farm we pay the men who are pruning one cent a piece for gathering all the nests that they can, and they frequently supplement their daily wages by considerable amounts in taking them off and putting them in their pockets while they are pruning the trees. Another method is to take a fishing rod, bind upon its end a small bulb of woolen cloth and thrust it in at the bottom of the web, as here shown in the chart, and turn or twist it ten or twelve times in order that it will catch and wind up all that there is of the tent or nest. This is far better than going through the orchard with kerosene torches, for they do not always burn all of the caterpillars, while at the same time very great injury is done to the branches from the burning.

The gypsy and brown-tail moths are doing incalculable injury about Boston; they are equally destructive when they come to the apple orchard, but by the early spraying with the arsenate of lead and Paris green, as soon as the young caterpillars appear, they may be effectively destroyed upon the trees. They are a most serious menace to the forest trees and are carrying destruction before them.

While our National Government is making very large appropriations for the increase of battleships and military equipment it would be better, for a time at least, to cut down appropriations for these purposes and apply them to the aid of New England,which is making an heroic fight to save the trees. These appropriations would benefit the country at large more than the war preparations, for if these two moths get beyond the control of New England, of which there is great danger, the entire United States will be exposed and it will cost hundreds upon hundreds of millions to save the trees of our country.

Among others of the most injurious insects imported to our country is the San José scale, which at the present time extends practically over the entire United States; this is one of the most destructive of all the orchard pests. It is so minute that it is not discovered for several years after its introduction, and its increasing numbers

sap the vitality and life of the trees which finally succumb and die; 95% of all of the old orchards upon Long Island are, today, practically ruined, and the same is becoming true of the southern tier of counties of New York, while in all of the Southern States vast numbers of trees have been destroyed and many are practically worthless from the presence of this insect. The San José scale was introduced into the United States more than thirty years ago, on an imported flowering peach tree brought in from China. For several years it slowly spread and was finally discovered by Prof. Comstock of Cornell University, who studied up its history and named it the San José Scale. In the illustration shown upon the chart the scale is magnified more than two thousand times, but upon the branches its work may be seen which are here so thickly covered that the bark is invisible. Unless this scale may be successfully controlled the old orchards of our country will in time be destroyed.

When the San José scale gets into our large, high, old apple trees it will be a most difficult problem to save them, hence I am greatly interested in growing another type of tree, known as Dwarf and Half-Dwarf trees, and I am planting at the present time trees that are propagated upon what is known as the French or Doucin stocks; they are a natural crab of France and will grow about sixteen feet high. These may be planted much closer together on good soil, twenty feet apart each way, which will give over one hundred trees to the acre; they may be easily sprayed; the fruit may be thinned; the pruning may be very readily done; and more of high grade fruit, such as is desirable to be sold in boxes may be grown from such trees.

I am also planting another class known as trees which are propagated upon Paradise roots, a crab grown largely in England, and also in France, but still smaller in size. These will grow to about nine or ten feet in height, and they may be planted even closer together — from eight to ten feet. They may be easily pruned and the fruit, while not so large in quantity is very superior in quality, and they may be interplanted with the half-dwarfs a few years and taken out when the ground is needed for the other trees. I believe there is future value in this class of trees, and upon them we can control any kind of insect that may make its appearance.

There are different methods for treating the San José scale; one

which has been used very extensively upon the Pacific Coast, and quite largely throughout the Western States is sulphur and lime in the following proportions, viz: twenty pounds of lime and fifteen pounds of flowers of sulphur boiled for upwards of an hour and added to fifty gallons of water; this is sprayed all over the trees while hot, and whenever the scales are hit by this mixture they are destroyed; the great difficulty is to hit them all and as their increase is so rapid the trees have to be sprayed each year.

We are using at Orchard Farm a soluble oil, known as "Scalecide." Thus far we are favorably impressed with this material because it is so much more easily prepared and applied. The lime and sulphur are very caustic to both the men and the teams where they have to work for a number of days, or even weeks, with it.

The quantity of Scalecide we are now using is one gallon to fifteen gallons of water, and it is only a question of applying this material as thoroughly as the sulphur and lime when it will produce equally as good results. It is a question of great thoroughness of application to successfully control the scale with whatever material is used.

Last year we sprayed several thousand trees about the City of New York with this soluble oil with most satisfactory results, using then one gallon to twenty of water; the work was so thoroughly done that even that strength gave good results. Several kinds of shrubs were so entirely encrusted with the scale that it seemed impossible to promise any hope of saving them, but the reports that have come to me indicate that not only were the scales thoroughly killed and cleaned off of these shrubs and trees, but they made most satisfactory growth the past season. One apple orchard was so infested with them that the fruit could not be sold, but after the application of Scalecide there has been no evidence of the scale upon the trees.

In answer to your inquiries I will say that this is made by G. B. Pratt Co., Chemists, 11 Broadway, New York.

In the renovation of an old orchard insect control is so large a factor that systematic and annual spraying will hereafter have to be done as one of the most important of its operations.

We have considered those orchards that are on land that may be cultivated and upon which spraying machinery may be worked. There are many old orchards in New England standing on rough

and roeky hillsides, where tillage and spraying are most diffieult to do and in many instanees entirely impractieable. Under these eonditions it would be best to put a wire fence about the orehard and turn in sheep to keep the grass down, and to keep all sprouts and bushes from growing up around the trees. The sheep will eat all dropped fruit, the first of which usually eontains the larvæ of the eodling moth, and thus these inseets will be kept under control to a eertain extent.

If the sheep are fed some grain while they are feeding upon the hillsides they will steadily improve the soil about the trees and also improve the quality of the fruit. There is value in the sheep, for there is a eertain demand for wool and mutton whether the apples are borne or not.

It is diffieult to spray these hillside orehards, but by using a small tank or barrel with a hand pump, which may be drawn about upon a sleigh or stone boat, even upon pretty rough ground, the trees may be suceessfully sprayed by hand.

The apples from these orchards will not be so large in size but the quality will be fine. No finer Baldwins are grown anywhere than on these New England hillside orchards; they get all of the sunlight and a good cireulation of air; they are beautifully eolored and have fine flavor; a New England Baldwin is a good table or dessert apple, so fine is its flavor. The reason why New England apple orehards have lived so long and the flavor of the apples continued so fine is because new soil is being continually made. The roeks, which are so abundant, are steadily disintegrating from the aetion of frost and so new particles of soil are made and these are carried over the land, replenishing and renewing it with exeellent plant food, espeeially in the form of potash. New England soil for this reason will continue to improve for thousands of years to come, while the level stoneless land of the West, which is being rapidly depleted of its plant food through continuous cropping, will have to be improved by the expenditure of large sums of money for fertilizers, whieh will inerease the eost of produetion upon our western land.

New England hills will again be eovered with sheep and agrieulture will be one of its profitable industries.

So great has grown the culture and demand for apples that pur-

chasers of land are now looking to New England for the purpose of establishing orchards, not only for the home market but for the export trade.

A few years ago, while addressing students of the Agricultural College of New Hampshire, I made the statement that the future promised much for young men who would take up the study of New England soil with the view of establishing upon it commercial orchards, for the purpose of supplying foreign markets with the Baldwin apple, which is supreme in its excellence when grown upon these high and rocky hills. Some Boston gentlemen read the report of this talk, saw in it a suggestion for them, and one gentleman, Mr. W. H. White, an extensive leather manufacturer of Lowell, whose offices were in Boston, wrote to me asking if it were possible to spare two or three days for the purpose of looking over some New Hampshire land with reference to planting apple trees. The soil was examined and found to be admirably adapted, a very large number of trees were purchased — between 15,000 and 20,000 — the land was put under thorough cultivation and the trees were planted and made the finest growth that could be desired. In view of the fact that it was thought possible to grow crimson clover in New Hampshire the seed was sown over a large portion of the ground upon which the trees had been planted, and I have never seen a better or more luxuriant growth on my own farm, or in any of the Southern States.

The abandoned farms, of which so much was said a few years since, are rapidly passing by. There are a great many city people who desire to get away, at least several months in the year, from the strenuous conditions which business and living in our large cities entail, and many of these are purchasing farms upon which they are establishing country homes, and nearly all are interested in developing a prosperous and successful orchard. This is giving new life and new impetus to New England, which has always been representative of the best conditions, socially, politically, and financially of any section of the United States.

The future has great promise in it through the planting of apple trees, and young men who will give study and care to more or less of tree planting on a commercial basis will find themselves in the enjoyment of independence and a life that is most desirable to be followed.

Discussion.

In response to an inquiry Mr. Powell gave a formula for Bordeaux mixture as follows: three pounds of sulphate of copper dissolved in twenty-five gallons of water; four pounds of slaked lime dissolved in twenty-five gallons of water; then pour the two compounds together, and in this diluted form it makes a perfect chemical combination; now for insects add to the fifty gallons thus made two pounds of arsenate of lead. He had found that six pounds of sulphate of copper was too much.

For a remedy for the San José scale many use twenty pounds of flowers of sulphur and fifteen pounds of lime boiled in fifty gallons of water. It must be applied hot. It is a troublesome thing to handle but it is effective. Some other preparations are now being used with fairly good results, and he recommended for small places the use of "Scalecide," a soluble oil.

Lysander S. Richards inquired if the lecturer uses any fertilizer in his orchard. Mr. Powell replied that he used no other fertilizer than clover culture which he found answered every purpose and that it met all the requirements of an old orchard thus far.

Samuel H. Warren recommended in orchard cultivation the use of the disc harrow instead of the plow thereby preventing damage to the roots of apple trees.

In reply to a question concerning the effect of extreme cold on the San José scale the lecturer stated that cold weather did not appear to have much effect on it, but naturally the scale increased more in milder regions.

In reference to a statement that the soil of New England was exhausted Mr. Powell said that it was good for orcharding for a thousand years to come. It has become the ideal orchard soil through the disintegration of the rocky material so abundantly scattered over it, a process which was continually going on, thus making it valuable in the renewal of old orchards.

Rev. C. L. Hutchins remarked that what the lecturer had said about the future of New England orcharding was very encouraging and in some points very discouraging. Referring to the matter of insect pests he complained of the attitude of indifference shown by many farmers regarding it. He might clear his orchards of the

pests only to be restocked by his neighbors. The principal thing needed, he said, in the renovation of old orchards was the renovation of old farmers.

Mr. Richards called attention to the practice of thinning apples and suggested that the lecturer must thin his apples in order to get fruit that would bring ten dollars a barrel. He had grown a Baldwin apple that measured one foot in circumference but it was the only one on the tree.

In reply to the question of thinning fruit Mr. Powell stated that it would hardly pay to go up too high in thinning and also in trimming trees, and that this question of thinning was quite a problem especially in regard to large trees. The expense of the work was out of proportion to the advantages gained. He was avoiding this himself by propagating half-dwarf stock, trees that would not attain a height of more than fifteen feet and thus were in easy reach for spraying, trimming, and thinning. He had planted hundreds of these and they were proving a great success, and that is where he was getting his fine fruit. He thought the Doucin stock a very hopeful tree and could be planted 110 to the acre. The cost of picking apples from very high trees was twenty cents a barrel while from low-headed trees it was but seven cents.

Mr. Hutchins stated that he had planted 150 dwarf trees as fillers in an orchard of standards.

Wilfrid Wheeler asked if the lecturer had ever tried hogs in the orchard.

Mr. Powell replied that he had and that it was a benefit to an old orchard on level land to let the hogs into it, it was better than sheep, but for a hillside orchard sheep were better than pigs.

The lecturer further stated in reply to questions that if he could have his choice of time it was best to prune trees in May or June. The effect of scraping trees was on the whole good. It destroyed quite a number of insects, but the scraping should not be too heavy or deep. Trees with hollow bodies could be filled up with cement and thus saved for many years. Before filling the insides the cavities should be thoroughly sprayed with Bordeaux mixture.

In reply to the question, What is the Doucin, or half-dwarf tree, and what is the dwarf or Paradise stock? Mr. Powell said that the Doucin is a native crab of France which, when budded, would

make a tree that would grow under good culture about sixteen feet high, and would produce from two and one-half to four barrels of apples. This is called frequently a half-dwarf. The Paradise is also a crab of smaller size. It grows largely in England and makes a tree from seven to nine feet in height, according to the variety budded upon it, and will produce from one and one-half to two bushels of fruit.

THE HOME VEGETABLE GARDEN.

BY JOHN W. DUNCAN, WEST ROXBURY, MASS.

Delivered before the Society, February 9, 1907.

The home vegetable garden is, perhaps, the most valuable adjunct to the home itself, apart from the immediate surroundings of the home grounds. To the large estate, as well as to the small suburban lot, with its few rods of a garden, it plays alike an important factor in the pleasures of the home. That there is great pleasure to the lover of horticulture in caring for the grounds, lawns, flowers, etc., every one will concede; but, let one get interested in the growing of choice vegetables, and one will find the task doubly fascinating, for, not only is it a joy to look at choice specimens of vegetables, but, when they appear, properly cooked, on the dinner table, one wonders that he can put up with even the choicest that may be bought from the most considerate dealers in the market.

I do not propose to enter into details as to the size, kind of soil, or location for the home vegetable garden; that has to be answered entirely by the owners themselves; and to grow vegetables in the garden depends mostly upon those having charge of the work. I wish to say, however, that the ground preferable for most kinds of vegetables is a medium-heavy loam. The garden should be well drained and subsoiled in all cases where the best results are expected and equally good results may be had if the work is done by the plow or spade. I am a great believer in intense cultivation. It should be the endeavor, at all times, to keep the surface of the ground stirred up, especially during dry weather.

It must always be borne in mind that special care should be given to manuring the ground for the different crops. I have seldom, if ever, seen soil too rich in a vegetable garden. Again, many of the crops may be benefited, at the proper time, during the growing season, by applications of such fertilizers as nitrate of soda or muriate of potash.

I have often heard it remarked, that it was not much of an accomplishment to grow vegetables, but I wish to emphatically dispel any such idea and to say that the gardener who can successfully and continuously supply the table wants from the vegetable garden during the whole year, is the man who is a credit to his profession. He is not an amateur by any means but an expert in this branch of horticulture.

There are many gardens where too little attention is given to the cultivation of the many rare and valuable vegetables which may be grown and brought to the table at seasons when there is a scarcity of variety, or where they make a valuable change to the, perhaps, epicurean tastes of the owner of the garden.

It should be the endeavor of the gardener at all times to secure something new of merit to which he may call the attention of his employer when a convenient opportunity presents itself; and, no matter how fond of fine flowers a lady or gentleman may be, I have yet failed to meet any who were not equally fond of choice vegetables.

It would be impracticable for me at this time to say which are the best varieties of vegetables, but I wish to pass a few remarks on some varieties of the more common kinds of vegetables which possess particular merit and which may be helpful at this season in the selection of seeds from the alluring catalogues of the many reliable seed houses — and, by the way, the procuring of high-grade seeds is one of the most important steps towards having a good vegetable garden. By high-grade seeds I mean seeds that are of the finest selection of the variety or species they represent. I have never yet found the seed store that could supply the highest grades of all kinds of vegetables that a gardener may wish to grow, and the gardener will invariably find that he may get an excellent selection or strain of one kind of seed from one particular seed store and another from some other. This is especially true of fine strains of flower seeds, and it is equally true or more so of vegetable seeds.

There are many specimens of vegetables from which the gardener will do well to save his own seeds. Careful selection of particular strains may be greatly improved in this way, especially of such vegetables as tomatoes, cucumbers, melons, beans, etc. Even some introducers of excellent varieties of vegetables soon lose a good strain of seeds, and it will be to the gardener's advantage to

always improve if he can. Of course, I do not mean to say that every gardener need be a Burbank, but I do mean to say that there are many opportunities lost by gardeners not having an eye to the improving of particular strains of whatsoever they may be growing.

Let us suppose that the gardener has at his command sufficient glass for the early starting of many kinds of vegetables. It is now high time to make a start, and the seeds of the earliest varieties of lettuce, cauliflower, cabbage, etc. should already be in the flats to be pricked out a little later and continued growing till planted out, either in hotbeds, frames, or in the open ground, as the ease may be. If the gardener has a limited amount of glass it will always repay him to save sufficient for the growing of a limited quantity of the early vegetables. The most particular attention should be given to the seasons of planting of seeds, so that a succession of crops will always be in order, and, by starting under glass about the middle of February, many vegetables may be had much earlier than if left till later.

As I have already said the first to start with at this season is lettuce, of such easy forcing varieties as White-Seeded Tennis Ball, Belmont, or Arlington Hothouse. The first may be planted in frames, and successive crops planted for outdoors. For summer planting no better varieties will be found than Salamander, Deacon, or New York. The Cos and Romaine lettuce are too seldom grown, and will be found invaluable for summer use, although to blanch them and have them crisp they are better by tying up.

Cauliflower should be early started under glass. Early Dwarf Erfurt will be found the best, if a good strain is secured. Later varieties of merit are Giltedge and Snowball. Of early cabbages, Jersey Wakefield will be found as satisfactory as any for the home garden. It should be the endeavor to secure small-sized and shapely varieties, rather than the large, coarse-growing kinds we too often see on our exhibition tables.

Brussels sprouts are a vegetable of the Brassica family that require a long season to grow, and, perhaps, for this reason, are too seldom seen; for fall and winter use, however, they will be found one of the most useful of vegetables. They are better to be started under glass, in early March. While I am at this family of plants I wish to say a few words about kohlrabi which is a splendid summer vegetable, the white varieties being the best.

It will be found best to start tomatoes early under glass, in order to have good-sized plants to set out-of-doors about the end of May. Many persons plant these out too early in the season: they become stunted, and do not fruit so early as they might otherwise. The variety is legion, and such varieties of English origin as Comet, Sterling Castle, Rochford, and Best-of-all have recently proved great favorites for the home table.

A few years ago much interest was taken in some of Greiner's books, one especially on the cultivation of the onion. There was little new about the method of cultivation, however, as it had been practiced, more or less, by European gardeners for ages. The method is to sow the seeds under glass and transplant the small onion plants in the open ground when the weather will permit, about the latter part of April. I believe the gardener will find this the best method, too. The most practical varieties are Early Queen, Southport, White Globe, Globe Danvers, and Prize-taker. Early crops of radishes may be started under glass; Scarlet Conical, Non Plus Ultra, and French Breakfast are all excellent sorts.

As spring opens one of the first of the vegetables to receive attention is the asparagus bed. If a winter covering has been put on the coarse material should be removed and the finer manure forked in. Asparagus may best be grown in rows about three to four feet apart, the plants having been set about eighteen inches asunder.

As soon as the ground is opened it will be time to get in the first crop of peas. And, by the way, this is one of the hardest vegetables to select and grow a succession of for the home garden. I believe there is no other vegetable that will show the selection of quality quicker than peas. Nott's Excelsior and American Wonder are both good dwarf sorts, and the latter, though not much of a cropper, will be found to possess that delicious quality sought after so often. Later varieties of merit are Advancer, Abundance, Everbearing, Stratagem, and Champion of England.

Beets are a vegetable that a continuous succession of crops needs to be sown in order to have them tender for table use. My selection of varieties would be Crosby's Egyptian, Arlington Favorite, and Edmands' Blood Turnip. Swiss Chard is a species too seldom grown. A row of this vegetable will be found indispensable in summer, when the leaves may be cooked for greens or the stalks and midribs stewed like asparagus.

Beans are among the principal vegetables in the garden. Among the dwarf varieties we have such as Earliest Red Valentine, Refugee, Ne Plus Ultra, Stringless Green Pod, Yosemite, and Kidney Wax, while among the pole varieties, Horticultural, Old Homestead, and Golden Cluster are favorites. Among the lima beans, Burpee's and Henderson's bush varieties will both be found worthy of growing, while King of the Garden and Sieva are both useful pole varieties.

Sweet corn is a very important vegetable, and one that needs considerable forethought for a continuous supply during its season. The most suitable varieties for table quality and succession of crop are First-of all, followed by Crosby, for early, although they should be planted at the same time to have them in succession. For medium crop, Potter's Excelsior is excellent, while for later crops, Stowell's Evergreen and Country Gentleman are the leaders. If a good strain of the latter is procured, it will be considered the finest of all sweet corns. Plantings should be made about every ten or twelve days from the time the ground is in condition to plant up to about July 4th. The latter planting may not materiate, as the weather may be against its maturing; but little will be lost.

Celery is an important crop of the garden. For early crop the seed may be started under glass and transplanted, when large enough, into rows. Other crops may be started later, as long as the plants are large enough to plant in the permanent rows about the middle of July. Popular varieties are White Plume, Golden Self-Blanching, Giant Pascal, Boston Market, and Dwarf Crimson. The first-named variety is not considered a first quality sort by many gardeners, but, if properly handled, it will be found as crisp and stringless as any. Boston Market is always popular and fine flavored for winter use; and, perhaps, it may be wondered at my mentioning a colored variety, but experience has taught me, that, for late keeping, this sort is of great value, and along in March and April, when all celery is about gone, a little coloring in the stalks will be relished rather than otherwise.

Cucumbers are much sought after, and, by planting at various seasons (perhaps the earliest may be started under glass), fresher cucumbers may be picked during the season. It will always pay to plant a few of the small pickling sorts, for home-made pickles are often more relished than factory-put-up sorts.

Carrots are of great value, both to be used in soups and as a vegetable. For early use French Forcing, while for late sorts Chantenay and Danvers Halflong are good. Parsnips are a root crop that need a long season to grow, but are very useful as a winter vegetable. Salsify is too seldom grown, but it will be found one of the best of vegetables for fall and winter use, having when cooked that peculiar flavor of its own, which gives it the name of vegetable oyster.

It is hardly necessary to mention turnips, and yet it is often a hard matter to get a good tasting turnip either for summer use or for winter, when the Rutabagas, or Swedish turnips, are much used as vegetables.

Spinach is much used as greens and may be planted for one of the early vegetables or for late fall and winter use. The New Zealand variety is much used by some people for the dry summer season.

Eggplants are one of our best summer vegetables, requiring warm weather to bring them to perfection. They should be started under glass, like tomatoes. The most serviceable variety is New York Improved Purple. It is a stronger grower and will produce more fruits than some others.

Peppers should be started under glass about the same time as eggplant.

Okra is a useful vegetable for soups. Plant for summer use, and, if the pods are kept cut off, a succession will be kept up on the plants till frost.

Leeks may be planted for use in soups or as a vegetable. To get good sized they may be transplanted, as recommended for the onions.

Summer squash may be put in at more than one planting. The Crookneck varieties are perhaps the best. Other varieties of squash may be planted, if room will permit.

Muskmelons, if they can be grown free from disease, should not be forgotten. There is such a difference as regards the quality of these in various locations that experience is the only teacher of which varieties to plant.

Watermelons do not ripen early enough in this locality.

I do not think you would wish me to forget the potato, and, if you have room to grow any, take for varieties those that are of a

small or medium size, and of a good shape. There is much room for improvement of many of the kinds of potatoes that are on the market.

Kale is seldom grown in this locality, but it will be found a valuable vegetable for greens in late fall.

Endive is a good vegetable for a salad, but its near neighbor, escarol, is a great improvement and may be grown in late summer protected in a frame, and used for salad purposes long into the winter months. It is very essential to tie this up so that it will be properly blanched.

There are quite a number of other vegetables which may be grown for greens, or for soups, or for salad purposes at different periods during the summer.

Cardoons are grown for the midribs of the leaves, which are cooked like asparagus. Dandelions of improved sorts will be found good in earliest spring. Celeriac, cress, chicory, chives, corn salad are all useful in salads, while chervil and tarragon are useful for soups and flavoring.

There are many herbs, too, which every home vegetable garden should have, for no good cook would be without them: of these we have savory, sage, lovage, fennel, borage, anise, etc.

I have not yet mentioned rhubarb, and, perhaps, I might pass over it, but I do not think that pies should be forgotten. This plant will be found to grow better if taken up and divided into single crowns about every third year.

Artichokes are not much grown here, but are considered a great delicacy by those who grow them. The plants may be started under glass in winter, and a partial crop may be had the first year. The plants need protection in winter, perhaps best given by a deep covering of dry leaves.

Sea kale is a vegetable little, if ever, grown, and, yet, if only known, would be much relished.

Quite a number of varieties of vegetables have, of recent years, been sent from China and Japan: of these we have the Japanese radishes, which grow much larger than our varieties, and as they are generally mild flavored many people like them. Then we have the Chinese mustard, which makes an excellent plant for greens, and the so-called Chinese cabbage, or Tsai, which does not head up

like our cabbage, but has a more loose lettuce-like head. The Chinese bean, or Towkok, makes an excellent string bean for late season. The pods are 20 inches long, or more, and when cooked have a delicious flavor, entirely different from other string beans.

I have now given you a summary of what will make, at least, a very good vegetable garden, so far as variety is concerned, but there are many things to be considered in the growing of these vegetables, and the grower has to be continually on the outlook for insect pests, which, of some species or other, attack almost every garden crop; and then there are the many fungoid and other diseases, for which special means of protection must in many cases be taken; and after all when you have raised the choicest of these vegetables they have, before they reach the table, to go through a process, which, if not up to the standard, may seriously impair the excellent qualities they may possess.

Discussion.

In reply to questions as to escarol and sea kale Mr. Duncan said that escarol was a broad-leaved endive and was one of the best winter salads, and was rapidly coming into popular favor. Sea kale was not much grown hereabouts but he had grown it successfully in southern New England; blanch the young shoots in spring by covering them with leaves and cook like asparagus.

Potatoes do best in old pasture land newly plowed up. March 20 was time enough to start tomatoes in the house. Regarding the use of nitrate of soda as a vegetable fertilizer he said that it was best to use a slight sprinkling of it periodically; not when planting, but during the growing season.

Duncan Finlayson suggested for beans the Wonder of France and the Mohawk which he had found very desirable varieties.

A lady remarked that the lecturer recommended the Country Gentleman corn; she had tried it two years and it had proved a failure, although it had been highly spoken of.

Mr. Duncan stated that in his experience he had never seen a tomato equal to the Ponderosa in size, texture, and flavor. While he advised it for the home garden it was not adapted for commercial cultivation.

A gentleman inquired concerning the watering of the vegetable garden during a dry summer.

Mr. Duncan in reply said that if the garden was well subsoiled and manured it would stand a dry season with little watering. The cultivator was the best watering machine you could get for a dry season.

R. W. Curtis said he thought some method of mulching would be beneficial in dry weather.

Mr. Duncan replied that there was no better mulch than the dry dust of the surface soil after frequent cultivation.

Varnum Frost said that the best instruction in farming came from personal experience and observation. Good farmers learn from observation and not from books. The greatest secret in farming was to know how long you could grow a certain vegetable in the same ground. He thought it a mistake to overfeed strawberries; a plant of the Marshall should have not less than thirty to forty square inches to grow in; he gave his eighty square inches. Root crops are likely to branch if too much manure is used.

Mr. Duncan said that not too much manure was the cause of the branching of roots, but the lack of deep trenching and subsoiling. The land should be trenched two spades' deep and a modern sulky plow used.

Robert Cameron rather doubted if one could use the plow in the home garden.

Mr. Duncan replied that where you can use the plow, use it.

In reply to the question, Is the first seed that ripens the best to save? Mr. Duncan answered, Rather select the seed of the best formed and finest specimens.

Mr. Finlayson asked if the lecturer advocated the saving of seed from one's own products. He had been taught that it was better to change the seed.

Mr. Duncan said that seed could be saved for years and that the grower should continually be on the outlook for new strains.

William N. Craig stated that the practise of pricking out onions that had been raised in heat was good for the production of big bulbs for exhibition purposes, but they would not keep near so well as the smaller and harder onions grown from seed sown outdoors. Onions succeeded best grown year after year on the same piece of

land. He had grown them seven years at North Easton on the same land and they improved yearly. For eight years he had done the same on another estate with equally good results. He remembered his father had kept a bed twenty-five years in the same spot and the crop was always good. Dressings of soot, especially the imported article, would destroy the onion maggot. He said that tomatoes trained to stakes, poles, or fences were vastly superior to those allowed to trail on the ground; a main stem and two laterals should be allowed to each plant; the fruit ripened better and was more perfect and clean than that grown under the old plan of culture.

Peep-o'-Day was the earliest sweet corn but it was small; he considered Golden Dawn a splendid early sort; the kernels were yellow but the flavor was delicious. In an ordinary season he would sow Stowell's Evergreen after July 4; Potter's Excelsior to July 10; the small early kinds from July 15 to 20; and they would come in season barring a very early frost. He preferred sowing corn in rows as compared with hills; the land produced more per square yard under the drill than under the hill system.

Mr. Craig said that the Golden Queen was an earlier and better flavored lettuce than any of the regular forcing sorts usually grown; the Commodore Nutt was small but it was a splendid extra early variety which could be planted twice as close as any of the Tennis-ball sorts.

Cauliflower sown indoors in January, pricked out in flats, then planted in cold frames in rich material, and kept well watered produced fine heads in late April through May and until peas came in season. It has a much finer flavor than large, outdoor-grown heads; the best forcing variety is Kronk's Extra Early Erfurt.

Mr. Craig recommended kan-udo, commonly called udo, a new Japanese vegetable received from the Department of Agriculture, Washington, last season. He thought it very promising. It should be planted in rows four feet apart and two feet between the plants. It should be allowed to grow all summer; cut down to the ground about September 1; and earth banked up a foot deep over the crowns. Thick, fleshy shoots would come up through this compost and could be used from the middle of October onward. These shoots can be used either as a salad or are excellent boiled in the same way as cauliflower and served with a white sauce.

Wilfrid Wheeler remarked that the matter of rotation of crops in a garden could be often dispensed with if the soil was tested for acidity with blue litmus paper, covering the paper about six inches deep in the soil and allowing it to remain about fifteen minutes. Upon removing the paper, if it remained blue the soil was all right, but if it was red the soil needed lime. This lime should be applied slaked at the rate of about one bushel to every four square rods of land. This application of lime should last for about five years. In testing the garden it is best to try a number of places, and gardens that have been worked a great many years are more apt to be acid than newer soil. One great benefit derived from this liming process is the freeing of insoluble nitrogen, and it is better after the soil has been limed not to put on any fertilizer of a nitrogenous nature.

CERTAIN USES OF THE SCHOOL GARDEN.

BY MISS ANNE WITHINGTON, BOSTON.

Delivered before the Society, February 16, 1907.

In the conduct of my work of teaching city children something of the art of gardening, I have found much entertainment and often much profit in the casual remarks of the persons who hang over the fence to view the living scene. Of the contribution the city school garden makes to the panorama of city life I shall have more to say. My reason for introducing the casual observer here is that, like others who take a friendly interest in the school garden movement, he usually has two reasons to justify the introduction of this new branch of learning into the school curriculum:

First — The moral effect produced by an acquaintance with Mother Nature.

Second — The economic benefit to be derived from teaching city children to cultivate the soil.

Now it seems to me more is taken for granted in these two justifications than the premises warrant. It may be true — and who should know better than the poet? that —

> "To him who in the love of Nature holds
> Communion with her visible forms, she speaks
> A various language,"

but it cannot be affirmed that mere familiarity with the world of out-of-doors begets understanding. We remember Wordsworth's farmer —

> "A primrose by a river's brim
> A yellow primrose was to him
> And nothing more."

We recall in our own experience many a farm worker who per-

formed his daily tasks as perfunctorily and with as little intelligence as the most machine-like of factory operatives.

For the second reason, the number of persons gaining a livelihood by agricultural pursuits is not likely at any time in the future to be more than a third of the whole population — if this proportion is maintained — and any technical training for this class should be furnished by technical, not public schools.

We cannot justify our invasion of the schools it seems to me, unless we squarely face the fact that we demand from the schools some things our fathers did not demand, and, further, in feeling about for the instruments whereby these things may be achieved, we have come upon the school garden.

1st. The older education aimed to fill the pupils' heads with authoritative facts. Our ideal is the awakening of the latent faculties of the child.

2d. The so-called learned professions were the goal of the course of study, though, of course, many fell by the wayside. The mediæval tradition of learning being a matter of monks, was transplanted to our shores and appeared in Puritan guise as education, even popular education being a preparation for the ministry.

The modern idea is that the public school, the elementary school, at least, shall fit for citizenship, not for a vocation, but shall so develop habits of doing, habits of thinking, that any vocation to which the gifts of the pupil justify his aspiration may be worthily filled, and further, as some educator has pointed out, that he may be fitted to survive in a world of ever-changing conditions.

3d. The schools of the past could concern themselves with "book-learning" solely, safe in the consciousness that the pupils were being trained in all kinds of manual arts, were learning many kinds of useful knowledge in the home, in the fields, in the workshop. Save for the knowledge country children acquire on the farm, all this training has passed from the ken of school children. The various movements for the introduction of training in the manual arts into the schools have been inspired by a discernment of this lack in the life of the modern child. Indeed, most emphatic and unsentimental is the testimony from some sources. Those who defend the employment of children in factories and workshops declare that the child needs industrial experience to fit him for his

future industrial life. So far we can go. However, more and more public opinion is demanding that child labor shall not be exploited for the benefit of the employer, but shall be conserved in school for the benefit of the child.

We see remarkable evidences of the changed attitude on the part of educational institutions toward the kind of scientific knowledge demanded by modern industry. We are told that Harvard this year admits applicants for the degree of bachelor of arts who offer an accepted requirement in place of Latin, and we read this very week that that high citadel of orthodox educational ideas, Oxford University itself, has established a chair of agricultural science in recognition of the fact recently discovered by Oxford, that agriculture is a science! Surely with this august precedent we may embark on any school garden adventure we will.

If, then, we can convince ourselves that the printed word is not the only thing with which schools may profitably concern themselves we may set about finding out the best way to teach a manual art — our gardening art, for instance. Here we are confronted with the differences in surroundings of various schools. However, whether we begin with the school in the crowded city, the factory town, the village or the country district, there are common uses to which the garden may be put. It may be used to teach arithmetic, geography, drawing, writing, spelling. Learning the multiplication table by planting peas is a pleasant process. Finding the area of a triangle in which one is to grow radishes is n't a distasteful task. When flax and hemp, winter wheat and rye, tobacco and peanuts are grown under our own observation the pages of the geography take on a new interest.

"What is that blue flower?" asked one of my North End girls one day last summer as we were visiting Mr. Rawson's farm in Arlington.

"Succory," I replied.

"Oh!" cried she, "we had that in the reading book — 'succory to match the sky' — Ralph Waldo Emerson." And she knew it the next time she saw it. Then, too, there can be no such medium for teaching reverence for the miracle of nature, the renewal of life, as any garden offers. The coming up of the seeds, the formation of the seeds, the needs of the plant, the kinship of the vegetable

and animal world afford many opportunities for the intelligent and sympathetic teacher to influence the child profoundly.

Moral instruction need not be a dismal matter. All the preachments in the world cannot illuminate the subject of regard for the rights of others as does one half-hour's work in a school garden. Correct habits of work can be taught in any garden. "They can fool you in the school room," said one of the Boston masters to me, as we watched the children at work, "but out here in the garden we can see whether they know or not."

All these things can be taught with like profit in any school garden. In some other respects the methods employed may be adapted to various ends. The country school garden might serve as a model for the community. No one familiar with our country towns in New England will deny that such a garden attached to the country school might be of inestimable service in calling attention to new ways of doing things, new plants, new varieties, new ideas. This, I am told, is the purpose of some of the school work in Tennessee, where one of the county school superintendents is striving to base the school work on agriculture, which is the prevailing industry of the community. Also, it conforms to the theory on which Hampton and Tuskegee Institutes have been so successfully conducted.

Then, in the village school we can see opportunities for making the garden of economic and æsthetic value. Much of the work of the village improvement societies has centered about the village school. Its grounds have been planted, its schoolrooms adorned. Why should the school not offer a place for learning how best to plant a small garden; how to obtain a succession of blossoming flowers; how colors should be arranged; how to plant ugly spots with vines and shrubs.

Then the factory town. Here we find ourselves confronted with the great modern industrial problem which underlies all our efforts to make this a better and more lovely world to live in. I shall never forget the effect produced upon me by the sight of the little gardens in Fall River at the time of the strike in the cotton mills two years ago. The Portuguese operatives retain their love of the cultivation of the soil in spite of their factory life, and they have a habit of clubbing together and hiring a tract of land on which they grow garden truck. At the time of my visit, in mid-summer, these

Portuguese, although among the poorest paid of the operatives, were able to withstand the long strain of the strike with less suffering than the better paid workers who had no garden produce to fall back upon. The entire absence of violence in any form during this strike was doubtless largely due to the fact that the farmers of the surrounding country brought in food supplies almost daily to contribute to the townspeople in distress. This seems to me a notable illustration of the imperative need for systematic efforts to bring the industrial population into closer relation to the soil.

The school in such a factory town can promote the economical welfare and incidentally the æsthetic benefit of the community by teaching children the art of gardening.

The city school garden meets needs unknown to suburban or rural districts. It is often the means of introducing the child to the life which sustains it. It opens a whole new world of interest to the city child and a life outside the city comes into the range of possibility. The city school garden does not effect an exodus into the country but it stimulates a movement into suburban districts which is of inestimable benefit.

We often forget that a large proportion of the dwellers in our crowded districts are by training adapted for country life. Such work as is carried on by the Italian and Jewish colonization societies is in recognition of this fact; but such private efforts must necessarily affect but few in number. The little city school garden reaches out to the great numbers of the children of these newcomers and teaches them that the agricultural life of their parents is not to be despised.

The contribution the city garden makes to the problems of the city neighborhood seems to me of inestimable value. We are so apt to forget that the casual passer-by has capacities for enriching our community life. I have had more than one experience while occupied with our gardens in city streets which has seemed to me significant. There are always many city-bound people in whom the sight of children working in the garden awakens memories.

The love of the soil is almost racial in the Italians, for instance, and their eager faces pressed against the high grating which separates our Hancock School garden from Prince Street is a sight I shall never forget. Another of our gardens is on Battery Street, close

to the East Boston Ferry. "Every day I look over the fence to see how much your things have grown" said one man to us last summer. Down in one of our Charlesbank gardens at the West End a little girl told me that she was trying hard to have a nice garden, "Because," said she, "my father works on the new West Boston Bridge and he walks through the park to and from his work to see how my plants are doing."

It seems to me that in our eagerness to show model gardens we sometimes forget that the crop we are after is a human not a vegetable one and that such fine feeling as this Irish laborer showed is much more precious than any rose or radish the most expensive gardens may yield.

Discussion.

In answer to a question as to the number of school gardens in Boston, Miss Withington stated that there were twelve under the care of the School Garden Committee which she represented. Most of them were in the crowded parts of the city. There were two at the North End, three at the West End, three in East Boston, three in South Boston, and one or two in the suburban districts. They varied in size according to the amount of land available for the purpose. The Rice School garden on Dartmouth Street accommodated forty boys; the Hancock School garden at the North End was on a house lot adjoining the school which had been bought by the city; and at the West End the Park Commissioners had given the use of two strips of ground for the gardens.

In reply to an inquiry concerning the number of children receiving garden instruction in proportion to the whole number in the school, Miss Withington said that in the city we are very much restricted. Our gardens are small and our schools are large. We usually take one class from a grade and generally from the sixth and seventh grades, because the children then are at an age when they are more or less responsible and not too old to be averse to garden work.

Each set of children has one year of work in the garden and the knowledge that they acquire does sink into their minds. Two hours a week are devoted to this work, but sometimes they get a

whole afternoon. The children do the planting and the watering, in fact, the actual work is done by them. The seeds are furnished through a contribution made by the city.

Robert Cameron said that he would like to know how the teachers get the practical knowledge necessary in carrying on the garden work. He had met a number and he had found them deficient, as a rule, in the knowledge of practical gardening. He thought it important that the teachers get the correct methods of garden work at the first.

Miss Withington replied that the teachers get their knowledge from practical gardeners and from other teachers. They often feel inadequately furnished with the necessary knowledge in gardening, and at such times they turn to the florists and gardeners who are always willing to help with their advice and suggestions. As the school garden movement develops there will be some systematic training of teachers to this end.

Mr. Cameron said that he had spent the month of December in Jamaica and had visited the Hope Gardens there where agricultural instruction was given to the school children. They have about an acre of garden for the children to work in, and the director talks to them about the soil, methods of planting, etc. They are shown the correct way of planting the principal agricultural products of the island, such as oranges, bananas, sugar cane, pineapples, and guava. On other days the chemist and the botanist give instruction in their respective lines. The aim is to train the children to be agriculturists. They are ahead of our schools in practical work and we ought to have something of the kind here. He believed that the children should be taught agriculture and that the teachers should be taught how to do their work properly.

William B. Carpenter said that the city should supply practical men to teach the teachers. He thought the movement towards agricultural education one of the best features of the present day. Among other things in the school garden he advocated a cereal garden. There are only eight cereals and all can be grown easily in our gardens, thus showing the development of these important plants and furnishing opportunity of seeing them growing side by side. Not one in a hundred, he said, knows how wheat, rice, and buckwheat look; the common things that are actually used in

everyday life. Then the three textile plants, cotton, flax, and hemp, can be grown. He noted an increasing tendency of the times towards the country life, and that the attendance at our agricultural colleges was being recruited from city boys.

William H. Spooner remarked that he was in hearty sympathy with this movement looking to the revival of interest in agricultural affairs among our school children. There was a marked and increasing tendency towards the rural life and there are now practically no abandoned farms in Massachusetts. He said that the attendance at the agricultural colleges was constantly increasing and largely from the city population, showing that the interest in agricultural pursuits was growing.

Mr. Hastings of Fitchburg said that he was a firm believer in the school and home garden and he believed it was going to do a great work for New England. He advocated simple, easily cultivated plants for the school garden and recommended especially the English double daisy, the seeds of which could be planted in boxes in the schoolroom. Then let every child take one to his home and raise a double daisy, and in that way the child is introduced to that plant, and from his acquaintance with it he is going to try others. Thus we foster in the child a tendency to individual work. He believed that we were going to get out of the city more and more and into the country, and this school garden instruction was encouraging this idea.

Mr. Cameron said that the child should know that there were fortunes in the soil and gold to be taken out of the ground. Teach the child to get these fortunes out of the land and not to be content to live in the slums of the city. The teacher should show the boys how to raise fruits and get money from them. Teach the boy to get these things out of the soil. Teach him to go out into the country where he can earn a better living than he can in the city.

Miss Withington said that the school gardens had actually produced agriculturists, for she knew of boys who had become so interested in the work that they had asked for employment on farms and were now occupying good positions. The only way of interesting the city child was to bring some of the country to him.

Mr. Cameron asked how the American child took to this garden work as compared with the children of foreigners.

Miss Withington replied that it was very noticeable that Italian children were very fond of this work and also the colored children were good workers. In her experience she had found an equally hearty response on the part of American children. In fact, nearly all children are interested in gardening and take pleasure in it.

Mr. Carpenter remarked that the school officials could not do a better thing for the practical instruction of children than to put some money into seeds and tools. It was just as legitimate an expense as to put money into books.

William N. Craig said that in North Easton they did not have a school garden but there were two Granges that were interested in the work and offered prizes to young gardeners for the best kept flower and vegetable gardens. In this way they hoped to reach the children of the schools. He said that instruction by practical gardeners was needed to produce best results.

A young lady remarked that the school garden exerted a civilizing effect upon the children. They were not so rough in their play; and she had observed that when a child had taken home a plant to put in the window the window very soon became clean and there was a general improvement in the surroundings.

Mrs. Wing suggested that technical knowledge was not everything to be desired. It was not necessary to know so much about the soils. Of greater value in the work of the school garden was the kindly interest in the child life, stimulating it to find pleasure in these things.

FORESTRY FROM A COMMERCIAL STANDPOINT.

BY PROF. F. WM. RANE, BOSTON.

Delivered before the Society, February 23, 1907.

There are few if any problems of greater moment and more economic importance to the state of Massachusetts at the present hour than that of forestry. I have held the position of State Forester to this commonwealth but for a few months. It has been my privilege and duty during this time to study and become familiar with our present forestry conditions. I have visited most sections of the state, and in terms of a physician and his patient my diagnosis of our forestry conditions as a whole, after due consideration of individual symptoms, clearly shows that our patient is extremely badly off; very sick indeed. A pronounced case of "Lumberosus." The case has developed into the acute form of "Boxboarditis." This disease to the specialist is well understood and it would be a delight for me to go into details and trace its various stages of development and from present knowledge point out with a reasonable degree of assurance that had the patient received proper treatment earlier, the present unfortunate condition could have been avoided. Will we ever reach that ideal, we are all aware of but too little heed, "an ounce of prevention is worth a pound of cure," or "a stitch in time saves nine?"

But here is our sick Massachusetts forestry patient. My duty as state forester seems clear at the outset, namely, the checking and holding of this forestry disease from further unnecessary development. If the patient can be relied upon to submit to a course of treatment there is every hope of her recovery.

Since taking charge of this patient last September my time has been entirely employed night and day in her behalf. Not only can a specialist derive pleasure in being able to be of service in his technical life's work from the purely scientific standpoint, but with

a patient so interesting, beloved, cherished and adored, not only by her own children, who have thoughtlessly neglected her, but by her fond admirers, the sister states throughout the nation, how can one do aught else than keep to his work as a task of love and sympathy?

Doubtless there are those present who have known this forest patient when she was healthy, vigorous, and strong; how beautiful primeval forests dotted this good old Bay State in those days, and how year by year they have succumbed to our mad rush of uneconomic commercialism, until today finds us in a sadly depleted and unrational condition, viewed from the standpoint of modern forest management. It is always easy to point out mistakes after they have happened, but experience though a dear teacher is nevertheless extremely effective. Year by year the primeval forest growth was cut and harvested, second growth, inferior but valuable, has followed where conditions have been favorable; this has in turn been utilized as soon as it reached merchantable size. Demand for forest products has been increasing in greater and greater proportion as we have been developing the state and nation, while the products themselves have likewise been approaching exhaustion. Our people have looked upon the forest products as inexhaustible, thinking, naturally, that though Massachusetts should be depleted there are plenty of other states at our very doors with indefinite supplies. Many of our country-loving and farsighted citizens have time and again in the past predicted our present calamity, but the commercial era has absorbed us, and the successful business man of America has been the admired of admirers. Aesthetics in a new country are as nothing compared with commercial activities when the bases of the commodities dealt in are free gifts and cost only for the marketing. The balance finally comes with the nation's development.

From the substantial old-time sawmill, formerly so common upon our streams, now only a relic of bygone days, our evolution has developed to the portable mill. Instead of taking the logs to the mill, we now take the mill to the logs. While it is easy to comprehend this change of milling operations and the economy therein, the effect upon forestry itself and the country community has changed most remarkably. When logs were taken to the mills

most farmers employed their teams and labor during the winter months in getting out lumber for home consumption, but sold enough to make the effort and time profitable. The old-fashioned method was also not to cut clean, but to take only the larger and mature trees. This practice did not destroy the forest but replacement followed rapidly. Our present method is to sell the stumpage and as the purchaser finds he is able to market every vestige of the product, the forest area is stripped of vegetation. In earlier days this extreme of clearing was done only when the land was to be used for agricultural purposes. Where the larger growth only was taken out in the past, in twenty years or so the same land could be cut over again at a profit; under present practice it will require a period nearly or quite twice as long for similar results. Again, even the cutting clear practice was not so productive of ill results until it came into such common usage. When only here and there a track was cut, the surrounding growth reseeded it, today the reseeding factor is also cut leaving great areas where nature is unable to assist as formerly. The white pine for example will reestablish itself wherever the conditions are favorable. When, as in earlier times, the ill-shaped and limbed specimens contained no commercial value, they were allowed to remain standing. These trees make our best seed trees, hence were responsible for reforesting the land with this species. Today even these seed trees have value, no matter how pronged or crooked; they will make box boards, pails, tubs, matches, etc., and bring prices from $14.00 to $16.00 a thousand when delivered. The results of this practice are as we find them altogether too common. Portable mills are operating at the present on wood-lots that in earlier times could not be used commercially. Where the diameters of trees were thought of in terms of feet, we have simply changed the feet to inches for present practical usage. The commercial pine tree of today hardly reaches the seed producing age before it is harvested.

What is true of white pine is equally true of many other of our forest trees. Our pulp companies chew up practically everything of the spruce, and even balsam fir which a few years ago was considered practically worthless, at present is of equal value with spruce in limited amounts. Hemlock was little thought of for joists and general framing material in buildings not long since,

but our carpenters now are not so particular. The American larch, commonly called tamarack or hackmatack, found growing in low moist situations was valueless until railroad ties and telegraph poles grew scarce, and then they found immediate value, now having largely disappeared. Hickory, commonly called walnut in New England, was the only wood thought suitable for tools, ax handles, whiffletrees, etc., but go on the market and see what are being substituted in its place; of course, our tools do not last as long as formerly. Were there time it could be shown that each and every kind of wood has special qualities that adapt it for specific usefulness. The more we advance in the commercial industries and manufacture we continue to discover new economic uses for all of our raw materials and products. There is not a species of wood grown at present but has a recognized standard of value. The time has come when simply the growing of cord wood in most sections of Massachusetts is a promising financial crop; particularly is this true where the burning of brick is an important industry.

We as a commonwealth are at an extremely interesting stage at the present time as regards our forestry problem. It is not only true of Massachusetts but of New England, and for that matter the whole country to a greater or less extent.

As long as the prices of forest products remained low we laughed at the idea of forest depletion. Experience is a wise teacher and although the histories of older countries point out very clearly the mistakes they have made, their errors are seldom heeded in a new country until many of the same experiences have resulted.

When our forefathers came to these shores New England was a vast wilderness, a primeval forest. We are told of the magnificent forests and how individual trees reached great proportions throughout this whole section. Even the decaying stumps still extant remind us that but yesterday in point of time these monarchs of the forest which had been growing for centuries were with us. Tomorrow forest trees producing over a thousand feet board measure will be a veritable curiosity. We country loving and public spirited people are extremely anxious that the nation reserve certain portions of the White Mountains and the Southern Appalachian range, that coming generations may enjoy, take pride in, and benefit

therefrom. A birthright for them as small as this is a pittance compared with the vast and almost endless expanse of virgin forest areas that was ours.

Viewing the subject as a whole, therefore, we must recognize that the time is ripe for action and public concern. To accomplish results much thoughtful study and definite systematic planning must be done in order that there will be no obstructions in the way. Education and example are our tools to work with.

"Forestry is the science and art of forming and cultivating forests; the management of growing timber." Forestry, therefore, as the title of my address indicates, is concerned with the economic production of merchantable wood and timber. Forestry should rightfully be thought of as a commercial industry. The forest products of a country should be one of her greatest assets, just as much as that of any other crop, agriculturally speaking, and even more to be relied upon than our income from mining, for with proper management the investment will be permanent, inexhaustible, and hence fundamental to the nation's life and prosperity.

Lumbering is as important to successful forestry as is the digging of potatoes or the harvesting of any crop when it is ripe. The same essentials of culture also must be understood in getting maximum returns in the one case as in the other.

Forestry and commercial forestry are synonymous terms. Forestry in its true sense when managed properly will utilize our 3,000,000 acres of land in Massachusetts, at present seen scattered in every section, known as waste land, abandoned pastures, sprout lands, barrens, plains, etc., returning them to forest culture. The same culture that will return saw logs to our mills, make work for our country folks in winter, replenish our town treasuries, repaint the old red schoolhouse, pay the sexton to again ring the church bell, make better roads, and in short return the former substantial livelihood of country life, will also conserve moisture, protect and enrich the soil, give an equitable climate, and return to Massachusetts and New England the natural beauty we all so much would love to see.

If commercial forestry will do this, the æsthetic man, who now and then sets out a shade tree and spends more time criticising the practical lumberman, can employ his time to better advantage.

Our portable mill operators who are to be found in nearly every country town are generally speaking our best and most public spirited citizens, and as a matter of fact the leaders of the communities. These men also are the most approachable men in the world and willing to foster and further every reasonable and commendable project. These men I am confident will be the men of the future to be relied upon to do things in forestry. The fact that forest products are valuable and likely to increase rather than diminish, it being an easy matter to demonstrate even at present prices that reforestation and better forest management will pay, gives life and interest to the undertaking.

Go into any rural section, or city for that matter, in Massachusetts today and discuss modern forestry intelligently, beginning with the collecting of the seed, time of year to gather it, when to plant, how to care for the seedling, distance apart to set for results, when to thin and whether to prune, number of years to maturity, the kind of soils for different species, probable returns upon the investment, etc., and there is little trouble in interesting our people.

For the rest of my time today I want to give some forestry data likely to be of interest. Any data given upon forestry is generally speaking only suggestive, but if the basis of estimating is also given comparative adaptations can be made where conditions vary.

In giving the following estimates, I have taken precaution to be conservative. It is better it is thought to give the data as it really exists although the picture may not be as attractive. The rate of interest, the price of land, and the assessed valuation upon the increment growth are all variable and elastic factors for basing computations.

Profits from Woodland under present conditions in Massachusetts.

Term of years 40. Taxes and valuation figured at 4% compound interest. Average price of woodland free of growth estimated at $6.00 per acre. As the trees grow an addition of $5.00 per acre every 10 years is allowed as follows:—

1st 10 years	$6.00;	2nd 10 years	$11.00;
3rd 10 years	16.00;	4th 10 years	21.00.

The average tax rate throughout the state is $17.00 per thousand.

Second growth white pine, chestnut, and sprout hardwood growth are those we are most familiar with.

(1) *Sprout Hardwood Growth.*

In sprout hardwood growth it is generally considered that a cord per year can be obtained in average conditions on an acre. Therefore 40 years equals 40 cords. Stumpage value $40. to $80. depending on locality and proximity to market.

Investment at the end of 40 years.

Compound interest of valuation $6.00 for 40 years,		$22.81
Taxes with interest.		
1st ten years	$3.97	
2nd " "	4.48	
3rd " "	4.83	
4th " "	4.29	17.57
	Total cost	$40.38

Profit $00.00 to $40.00 in 40 years per acre or $0.00 to $1.00 an acre per year.

(2) *Chestnut Growth.*

Can expect about 100 good telephone poles or 300 ties with 15 cords of wood = total net approximate value of $100. Investment at end of 40 years same as for sprout hardwood growth $40.00. This leaves a net profit of $60.00 per acre in 40 years or $1.50 a year per acre average.

(3) *Second Growth White Pine (Natural reproduction).*

From actual measurements this growth was found to yield on an acre 25 cords of white pine and 15 cords of hardwood. A cord in terms of lumber meaning a thousand board feet. White pine is worth $5.00 per cord and hardwood $1.00. Total 40 cords equals $140.00. Deducting $40.00, the investment which is the same as for sprout hardwood growth and chestnut, leaves a net return of $100.00 an acre in 40 years or a net income of $2.50 a year per acre.

(4) *Natural Pastures (so called).*

There are in Massachusetts over 1,000,000 acres of pasture lands. Assuming that all cattle and sheep are pastured at the average rental, statistics show that these lands do not average $1.50 a year per acre. If from this sum we subtract $1.00 a year the amount allowed for taxes on valuation, and compound interest on valuation, the same amount as allowed in the case of forest lands, the net income for an acre per year is only 50 cents. This shows that there are thousands of acres of pasture lands in Massachusetts that rightfully and economically should be turned over to forestry.

Time was when this state was a great producer of grazing animals that were raised at a profit. Conditions now are vastly changed and if we have learned anything in scientific agriculture in recent years it is that concentration on smaller areas and a more definite rotation of crops make the successful farmer. This same logic and philosophy turn over acres upon acres of lands of our farms at present in an unproductive and unprofitable stage to an industry with not only great possibilities commercially, but improving a condition at present greatly needed.

(5) *White Pine Planted. (Nursery stock).*

White pine seedlings set 6×6 feet require 1210 per acre. Two year seedlings are worth $5.00 per 1000.

Compound interest on valuation $11. for 40 years			$41.81
1210 seedlings	6.05		
transplanting 1210 seedlings	4.95		
total	$11.00	at interest for 40 years =	52.80
Taxes with interest 1st 10 years	= $6.63		
2nd " "	= 7.15		
3rd " "	= 6.34		
4th " "	= 6.33		26.45
		total cost	$121.06

Product at end 40 years 40 cords or 40,000 B. M. feet at $5. equals $200., leaving a net profit of $78.94 or $1.97 a year per acre.

These figures are based upon the maximum cost of seedlings and

planting, also the valuation of pasture land at $11.00 instead of waste lands as considered under (1) (2) and (3) at $6.00.

(6) *White Pine Planted (Home grown or native seedlings).*

Compound interest on valuation ($6.) for 40 years	$22.81
Initial outlay for seedlings and planting $5. per acre plus interest for 40 years	29.00
Taxes with interest 40 years	17.57
	$69.38

Returns at end of 40 years, 40 cords or 40,000 B. M. feet at $5. equals $200. Subtracting cost $69.38, leaves the net profit in 40 years $130.62 or an average of $3.26 a year per acre.

Reducing the whole to tabular form we have the following:—

(1). Under favorable natural conditions of reforestation. Returns per acre in 40 years and average return an acre each year.

Growth.	Per acre in 40 years.	Average an acre each year.
Hardwood	$00. to $40.	$0.00 to $1.00
Chestnut	60.	1.50
Second growth white pine	100.	2.50
From pasture land valuation $11. average .50 an acre each year.		

(2). Where trees are planted. Returns per acre in 40 years and average return an acre each year.

White Pine.		Per acre in 40 years.	Average an acre each year.
Valuation	$11.		
Seedlings, Planting	11.	$70.00	$1.75
Valuation	6.	130.62	3.26
Seedlings, Planting	5.		

From these calculations it is shown that even under present con-

ditions forestry can be practiced commercially with a reasonable profit. As a long-time investment the returns must be considered as offering exceptional opportunities. The rate of interest under each example cited per year for the principal first used besides the 4% already charged at the end of the 40 year period, is in each case as follows:— (1) 0 to 16%; (2) 25%; (3) 41%; (4) 4%; (5) 9%; (6) 29%.

No matter how attractive we may make it the fact still remains that few people are willing to make long-time investments and wait for their fruition. The time is coming, however, when farsighted business men will recognize this source of investment as a safe and profitable one. The State of Massachusetts it is believed can well afford to make a beginning in this direction by purchasing at low cost much of our cheap lands and restocking them as forest reserves. Not only can they be made a valuable asset in the future to the commonwealth but serve as examples of forestry methods.

Forest fires are a great menace to practicing modern forestry in Massachusetts and are undoubtedly one of the greatest drawbacks to forestry undertakings. Our present laws regulating this problem are not effective enough. We have bills before the present general court of Massachusetts looking toward an improvement in this direction.

The laws relative to the taxation of forest lands are in no way systematized or deduced to securing the best results. It is to be hoped that some simple, practical, and expedient forest taxation laws may be formulated at an early time.

The greatest of all needs, however, and we must come back to it as the foundation upon which our whole forestry structure must stand for success, is a well-defined educational system by which our people may be taught not only to recognize the importance of forestry but how to get best results from a practical knowledge of the theory and practice combined.

In conclusion I would say let us be wise and farsighted. The Massachusetts and New England of the future will be what you and I make it. History repeats itself. In the old world the rise and fall of the Roman Empire had its associations with commercial forestry. Spain once the country of equitable climatic conditions and beautiful meadows, the native country of the merino

sheep and a progressive and prosperous agriculture, has cut down her forests, denuded her mountains, and what is her present condition? We are told that in biblical times certain valleys in Palestine were so fertile that they sustained and nourished great flocks and herds, figuratively speaking these valleys flowed with milk and honey. In those days the cedar of Lebanon and other forest trees were found in all their glory. What sort of a country is Palestine today? Travelers tell us it is dangerous to travel without a guide, the country is parched, dry, and desolate.

What do we propose for the future of this nation or for that matter Massachusetts? If we are public spirited, as I believe we are, and have a love for our country and commonwealth we will awake to our responsibility ere it is too late.

Instead of following the example of countries like those mentioned let us emulate the example of Germany, where modern forestry is practiced successfully. Then and only then can we feel proud in believing we have done our full duty toward the forest interests of our native land.

Discussion.

Wilfred Wheeler asked the lecturer if he had ever tried the experiment of seeding directly upon the land instead of transplanting the seedlings.

Prof. Rane replied that he had tried this method and sometimes with good results, but it was wasteful of seed. It would take five pounds of seed to the acre in this way, and with seed costing $3.75 per pound, it was rather expensive for the results obtained. The transplanting of two-year-old seedlings was a much better plan.

Duncan Finlayson asked if the figures shown in the diagram were taken from actual experience, and also inquired if there was any way of exterminating the pine weevil which in some localities was doing serious injury by destroying the topmost branches of young white pines.

Prof. Rane answered in regard to the first question that the estimates and figures given in his chart were based upon practical conditions and were conservative rather than otherwise. Concerning the pine weevil he said there was no cause to be alarmed

about it. This insect is not a new one, and while one lot might be hurt by its depredations another lot, perhaps only a mile away, would be all right. He said that he thought it would be no worse in planted areas than it was under native conditions. The only thing to be done, in most cases, was to cut out the leader, which seems to be part of the tree mostly affected and burn it. It was not necessary to be alarmed about the danger from the pine tree weevil.

Mr. Wheeler remarked upon the value of the wood of the white and yellow willows for which he found a ready market on the spot at $8.00 a cord. It was considered very desirable for charcoal in the manufacture of gunpowder.

Robert Cameron said that in this country we have not made such progress in the science of forestry as has been made in the old world, especially in Germany, England, and Scotland. In Scotland there are probably 100,000 acres of planted forests, all started from two-year-old seedlings. They never plant the seeds directly but transplant the seedlings about six feet apart. It was necessary to have plants with fibrous roots for successful transplanting, and this can only be obtained by several transplantings from the seed.

Prof. Rane remarked that conditions in this country were very different from those of Europe. The item of the cost of labor was an important matter in favor of European forestry work.

In reply to a question as to when trees should be thinned Prof. Rane said that it was the usual practice here to thin when the tree is large enough to pay for the thinning.

Theodore F. Borst said that he was much interested in the subject of forest planting in this country. The use of wild seedlings was once advocated but the supply obtainable was wholly inadequate for commercial demands, and we now have to depend upon nursery-grown stock which we can buy cheaper than we can obtain the wild seedlings. The sown forest is more difficult to manage than the planted forest. The spacing of trees depends upon the conditions of the ground to be covered, ordinarily he recommended 10 by 10 feet.

William N. Craig inquired if the lecturer could give an example, as an object lesson, of a piece of land in any part of the state that had been planted with seedlings with a view to a timber crop for profit.

Prof. Rane, in reply, referred to Bulletins of the United States Department of Agriculture in which several examples were given.

Mr. Borst said there were about 8000 acres of reforested land in this state.

William H. Spooner called attention to the frequent occurrence of forest fires and suggested the advisability of opening fire roads or open spaces as a means of checking these fires.

Prof. Rane remarked that legislation is now being asked for with a view of doing something towards preventing further damage from this cause, and that there should be a firewarden in every town. He said that one of the bugbears of forest planting is the forest fire.

Mr. Borst said there was no question that the forest fire service should be improved. The state had not done its duty in the line of protection from forest fires. Some bill that is an improvement on the present laws should be passed at once.

THE PLANTING OF STREETS AND WAYSIDES.

BY JOHN A. PETTIGREW, BOSTON.

Delivered before the Society, March 2, 1907.

The planting of street trees should be classed as one of the most important of civic duties. It matters little how imposing the architecture of a city is, unless its lines are softened by the foliage of trees, it seems devoid of artistic beauty, warmth, and hospitality. On the contrary, let a street be ever so unpretentious as to its architectural features, yet, if its dwellings are banked in foliage, an air of homelike peace and contentment seems to pervade.

Apart from the artistic beauty that trees impart to the streets of our cities, from a financial point of view the planting of street trees has much merit. Barren, shadeless streets are not attractive to visitors or to home-seekers. As a business proposition, unplanted streets may fairly be classed with dirty streets, unsanitary conditions, or with any other form of slovenly civic housekeeping.

I am advocating nothing new when I claim that the systematic planting of trees in city streets adds greatly to the value of contiguous property. Anyone who has given the subject thought or has had experience in property values is aware of the truth of this statement. It is as patent as the fact that the construction of parks has had an enormous influence financially on adjacent property. As illustrating this, I quote from the report of a committee of the New York Park Association, published in 1882, which shows the immense pecuniary returns to the City of New York in twenty-five years from the construction of Central Park. The total amount spent, to the date of the report, 1882, for the purchase of land, for construction, maintenance, and interest amounted to $43,794,150. Quoting from the report: "Large as this amount appears, and undoubtedly is, it is comparatively insignificant in view of the enormous benefit which resulted finan-

cially to the city from the improvement. The amount collected in twenty-five years on the property of the three wards named (the wards contiguous to Central Park) over and above the ordinary increase on the tax value of real estate in the rest of the city, was $65,000,000, or about twenty-one millions of dollars more than the aggregate expense attending and following the establishment of the park up to the present year. Regarding the whole transaction in the light of a real estate speculation alone, the city has twenty-one millions of dollars in cash over and above the outlay, and acquired in addition thereto land valued at two hundred millions of dollars."

The above statement shows the influence Central Park had on the value of contiguous property up to 1882. The enormous value of the same property at the present day, in comparison with real estate further removed from Central Park, shows the continued influence of public parks on the value of adjoining property.

That the establishment of park areas has invariably enhanced the real estate value of contiguous property has been the experience also of other cities. The commissioners of the Boston Park Department, in their report for the year 1896, page 63, referring to the increased value of lands surrounding park areas, say,— "Wth regard to the influence of public parks on the neighboring real estate, no recent figures have been made. In 1890 the Board published a statement of the increase in value of the Back Bay lands since the establishment of the park. By this table it will be found that the land alone was trebled in value in thirteen years, while the valuation of land in the rest of the city during the same period increased only eighteen per cent. The increased taxes on this land, without including the buildings erected, aggregated over two million dollars, a sum more than sufficient to pay the entire cost of the improvement at that time. The increased taxes on new buildings erected on these lands yielded one and one-half millions more of revenue. While the increase in the value of the lands adjoining other parks of the city has not shown a like phenomenal growth, present indications point to a largely increased revenue from this cause in the future which may justify the opinion expressed in the earliest report of the Board, that the establishment of public parks will have the tendency to lessen the rate of taxation instead of increas-

ing it. The cost of the land taken for the Back Bay Fens averaged about twelve cents per foot; the cost of improving the site brings the present cost of the land up to fifty-two cents per square foot, while the adjoining land is selling at three dollars to five dollars per foot.

"The cost of Franklin Park land averaged about seven cents per foot, and the cost of improvement about an equal amount, or a total of fifteen cents per foot, which is a moderate valuation for this magnificent property, where land adjoining will bring from fifty cents to a dollar per foot. The same result is shown in the case of the whole park system, the average cost of which today is only six cents per foot for the land and about eight cents per foot for improvements."

Various motives governed the promoters of the park movement, but the prevailing motive was primarily to introduce rural landscapes into cities and towns. When cities were not so large or so densely populated they were more rural in character, and satisfied public requirements in this respect; but, as population increased, the villas and cottages, with their accompanying grounds and gardens, gave place to bricks and mortar piled up in closely built blocks, and the woods and fields, so eagerly yearned for by the city dwellers, became more and more remote with each year. The park movement, therefore, was born of necessity; the physical well-being, comfort, and health of the public demanded that open spaces conveniently located, should be provided for public use.

Mr. Milo R. Maltbie, Assistant Secretary of the New York Art Commission, as agent of the Art Commission, and under the auspices of the State Department of the United States commissioned to investigate the progress of civic improvement in the cities of Northern Europe, says, "The ample provision made by many European cities has turned many boulevards into continuous park systems." In London, the fine, new thoroughfare between Holborn and the Strand, and the Strand, too, in its newly widened portions, have been planted with trees. This is quite an innovation, as the Strand was entirely treeless, and probably had been so since the roar of traffic drove away its aristocratic residents.

Paris, also, in its gigantic scheme of street reconstruction has been mindful of the value of trees for the adornment of its new creation.

Its public trees now number over 100,000. Sixty thousand dollars per annum is spent in the work of caring for them; and this amount has relatively a greater purchasing power in Paris than it has here. The city has established nurseries for the growth of suitable trees for street planting, even to the extent of growing a proportion of them to a large size, so that gaps made by death in the avenues of trees may be filled with trees of even size, thus maintaining symmetrical effect.

The Puritan Fathers of Old Boston apparently were mindful of the advantage to the city of street planting. The records of 200 years ago show this. Ordinances were passed providing for the planting and the protection of trees from vandal hands, for there were, as there are today, mischievous destroyers, who "cut, hacked and spoyled trees," for the detection and conviction of whom one-half of the penalty imposed was paid to the informer.

From the researches of Mr. Albert Matthews, in the old records of Boston, we find that three rows of trees were planted on Tremont street mall, by the selectmen, or by private individuals of public spirit, between 1725 and 1784; a few of the latter planting existed until quite recently. The Beacon street mall was laid out and planted in 1816, and the Charles street mall in 1824. These references, gleaned from Mr. Matthews' interesting compilation bearing on the subject of the early planting and care of public trees, show that the ancestors of the present generation fully appreciated the value of trees for beautifying the streets and public places. This is further shown by the number of fine trees with which New England towns and waysides are endowed.

It is much to be regretted that the citizen of Boston of today does not appreciate the value of street trees as did his ancestors. This is evidenced by the starved and mangled specimens to be seen on every hand, whose branches are hacked and cut by linemen, whose roots are poisoned by leaking gas pipes, or mutilated by careless ditch diggers, and whose trunks are scarred by the gnawing of generations of unhitched horses, or by the knives of mischievous and destructive persons. When one sees these battle-scarred veterans on the streets enduring ill-use year after year, and often decade after decade, yet still putting forth leaves in the spring, in a struggle for existence, one cannot but realize that nature has endowed many

of our trees with remarkable endurance and great adaptability for the embellishment of our streets.

Tree-lined streets not only form an artistic and appropriate connection between the home and the parks or open country, but they have an educational value and an elevating influence on a large proportion of the city dwellers, for whom, for the greater part of their lives, the trees of the street are all of sylvan beauty they are permitted to enjoy between their infrequent visits to the parks or to the country.

Trees ameliorate the heated conditions of summer temperatures, not only by the shade they afford, but by the large amount of moisture they draw from the ground and evaporate. They are also good sanitary agents, in that they absorb stagnant water through their roots, and exhale through their leaves life-giving oxygen. The value of trees from a sanitary point of view is illustrated by the action of the New York Medical Society, which passed this resolution, "That, one of the most effective means for mitigating the intense heat of the summer months and diminishing the death rate among children, is the cultivation of an adequate number of trees in the streets." This is further emphasized by the fact that the bill presented to the Legislature of New York, asking that the street trees of the City of New York be placed under the care of the Park Commissioners, was drawn by a physician, a member of the State Board of Health, and was introduced merely as a sanitary measure.

Boston is well to the front in civic pride and achievement; its public bathing facilities, its playgrounds, and gymnasia, its system of parks, its libraries and its art collections, as well as its many other public institutions give evidence of this preëminence in public spirit. In view of this, it is hard to understand why such apathy as is found here in Boston should exist with regard to the planting and the care of trees in its streets, seeing that they stand for so much that is for the well-being of the city and the comfort of its inhabitants. Even in the streets newly planned or laid out little or no provision is being made for trees. Such a policy is sadly detrimental to the city's interests; streets without trees in time are apt to be relegated to squalor and obscurity. Imagine the effect if Boston should wake up to a realization of its wasted opportunities and should plant trees in the sun-baked streets of the Back Bay district!

Under the present conditions is it little wonder that they are shunned in summer? Huntington avenue, Tremont street, Columbus avenue, and many other streets offer splendid opportunities for the planting of trees.

Practical effort is being made by many cities throughout the country to solve the problem, What is the best method to adopt for the planting and care of street trees? New York City, which probably plants more street trees than all the other cities of the United States put together, vests the authority to plant in the Local Improvement District Boards, which act on petitions from residents of streets or districts, the cost being assessed pro rata on the frontage planted.

Over forty years ago Worcester took up the question of planting its streets with trees. Of late the work has been under the direction of the Park Commissioners. The effect of this effort to beautify the city by planting trees is clearly demonstrated by the many finely-grown trees with which Worcester's streets are now adorned.

Over thirty years ago the United States Government appointed a commission to plant trees in the City of Washington. To this action, coupled with the intelligence and energy of the commission, is due the fact that Washington is one of the most systematically planted cities in the United States. Its asphalted roadways and paved sidewalks, generally, are well shaded, ameliorating the terrible heat conditions of summer; Washington without trees would be almost uninhabitable during the heated term.

The statutes of Massachusetts make it obligatory upon towns to elect a tree warden, and vest in him the entire charge of public shade trees. Under the act the warden is clothed with authority sufficient for the purpose of properly protecting and planting trees in the public streets and highways. The clause relating to the raising of funds to meet the expense is left to the option of the selectmen; it may or it may not be done; thus the execution of the intent of those who introduced the measure is hampered.

Whether the responsibility for the planting and care of street trees is vested in a forester, a department of the city government, or in a separate commission matters little provided the authoritative head has the necessary knowledge and ability, is clothed with sufficient authority, and is provided with adequate funds to carry

on the work, and is further held in strict accountability for its performance. When these requisites are lacking, failures or a half-hearted execution of the trust result.

Associations formed for the object of encouraging the planting of trees by individual effort, or by coöperative methods, seldom accomplish much. Not every one possesses sufficient enthusiasm to enter into the work of planting trees on the streets; the results appear too far off, and planting for posterity seems, to many persons, too much of a self-sacrifice.

Compared with individual effort, without doubt, the work can be done more comprehensively and economically under municipal supervision. Under a well-organized bureau the whole work of street embellishment can be intelligently considered, including such subjects as the planting of waste grounds, soils, exposures, the selection of trees to suit the varying conditions found in the streets, pruning, fertilizing, and the destruction of insect pests. A nursery in which to grow and prepare trees for planting in the streets should be a part of the equipment of such a bureau.

The selection of trees for the streets is a matter of special importance. Fortunately we have a wealth of material from which to choose. I will enumerate a few trees that I consider the best fitted for the work.

The American elm (*Ulmus Americana*) is endeared to the people of New England by the manner in which it has embowered many of our towns and waysides with its beautiful pendulous branches; the fame of New England's elms has spread far and wide. The American elm is not suitable for planting under hard conditions in city streets; it loves a rich, moist soil, with plenty of room for development; for wide suburban streets and for waysides it is a grand tree.

The European elm (*Ulmus campestris*) is a noble tree. It has not the graceful, pendulous habit of the American elm, yet it possesses, in its columnar trunk, a stately grandeur hardly equaled by any other tree. It thrives well under adverse conditions. As a sidewalk tree it has many valuable qualities, conspicuous among which is the persistency of its rich, green leaves, lasting, as they do, until late in the autumn. In some seasons its summer growth does not become ripened sufficiently to stand the winters in this latitude;

yet this trouble is not so serious as to prevent its use for any situation where shade trees can be grown. It loves good soil, but will adapt itself to poor fare if necessary.

The horse chestnut (*Aesculus Hippocastanum*) is a tree from Europe. It grows very freely, gives dense shade, and is a popular favorite on account of the beauty of its flowers in the early summer. Its foliage ripens and falls early in the autumn. It is a suitable tree for city streets but must have a strong soil.

The soft maple (*Acer dasycarpum*) is a fine tree for wide streets or waysides where good soil is abundant. It requires space and sunlight to give the best results. It is reputed to be easily injured by storms on account of weakness of fibre; this occurs only when it is grown under crowded conditions.

The hard or sugar maple (*Acer saccharinum*) does not make a good city tree; it is impatient under rough treatment; sidewalks and paved streets are fatal to it. It is, however, a good tree for suburban conditions, or for country waysides. This tree will adapt itself to a thin soil and is one of our handsomest North American trees.

The Norway maple (*Acer platanoides*) is an introduction from central Europe. It forms a rather wide-spreading, handsome top, with a wealth of large leaves, and gives a dense shade. It is not to be recommended for city conditions on account of its width of spread; it is suitable only for wide streets and waysides. When young its foliage is thin and tender, and, in exposed positions, it is easily damaged by storms.

The American ash (*Fraxinus Americana*) is an adaptable tree. It grows fairly well in suburban districts as a sidewalk tree, but is not so desirable as many others on account of the late leafing out and early ripening of its foliage. In poor soil and in dry localities it is apt to be attacked by borers and by the scale insect. In rich soil its growth is rapid, producing a picturesque tree.

The buttonwood, or sycamore (*Platanus occidentalis*), is a lofty, quick-growing tree, but is not to be recommended for planting in this section of the country, on account of its liability to infestations of fungi, which blacken the leaves. Its near relation, the oriental sycamore, resembles it in appearance, although it is more compact. This species is much valued in New York and its neighborhood for

street planting. It quickly forms a large tree and its foliage is clean looking and handsome. It is largely used in London as a street tree, the Thames embankment being one of the thoroughfares planted with it.

The maidenhair tree (*Ginkgo biloba*) is from Japan. This tree has not been used for street planting, to my knowledge, except in Washington, where two streets are planted with it, and it has proved most satisfactory. In good soil it grows rapidly, and it seems to have no insect enemies. It forms a handsome avenue, as can be seen on the Agricultural Building grounds in Washington, or on Pierce street, where the planting before mentioned has been done. Boston and vicinity probably is the most northern limit of its hardiness, or, rather, I should say, of its free growth. Fine trees of this species can be seen in the Public Garden and at Mt. Auburn Cemetery. The Park Department planted Tonawanda street in Dorchester with this tree. It has done well, although little care has been bestowed upon it. The Ginkgo bids fair to be a valuable acquisition to our street trees.

The American beech (*Fagus ferruginea*) is one of the most ornamental of American trees, but, on account of its low-branching in the open, and its surface-rooting habit, it is not adapted to city planting. This tree loves too well the soft, leafy mulch of its native woods to bear transplanting to the heated sidewalks.

The silver poplar (*Populus alba*), introduced from Europe, is one of the best trees for hard conditions. In smoky, dusty, and thickly populated localities, or in poor soil, it will exist and make a brave show. By many it is esteemed an ugly tree. The poplar trees planted by Strauch, in Cincinnati, however, would convince anyone to the contrary. Or, without going further than East Boston, one could have found in Maverick Square two fine specimens until three years ago, when they were removed to make way for the new tunnel entrance. This tree has a disagreeable habit of suckering.

The American linden (*Tilia Americana*) is a tree that will accommodate itself fairly well to suburban life, provided it is given good soil, and is protected from the tussock moth, to which it seems to be a favorite food plant. For a wayside tree, it is well adapted, being of quick growth and of handsome proportions.

The European linden (*Tilia vulgaris*), as its name indicates, is from Europe, and has a well-deserved reputation as a fine shade tree. Planted in good soil, it will grow under very crowded conditions of street life. In South Boston it can be found growing in brick-paved sidewalks, and persistently putting forth leaves each spring, which are as persistently eaten off by the caterpillar of the tussock moth. It forms a tree of stately growth, holding its leaves well into the fall; while, in early summer, with its near relative, the American linden, its flowers charge the air with a delicious perfume.

The tree of heaven (*Ailanthus glandulosa*) is a tree of the tenements. No city conditions, be they ever so hard, seem to discourage its growth altogether. It can be found in narrow courtyards on Beacon Hill, throwing up its foliage to the housetops; while in other parts of Boston it can be seen in corners by the stoop, thriving equally well. Apparently it has not been used as a street tree in Boston, probably from the reputation that the male flowers have of emitting a disagreeable odor. I have lived on Long Island where the Ailanthus is naturalized, and where some fine specimens are found as street trees, and I have never been able to detect any odor from them unless I placed the flowers to my nostrils. This objection, however, can be obviated by using pistillate trees. In rich soils there might be kill-back in winter, from under-ripened wood; but in poor soils this trouble would not occur. I am confident that no mistake can be made in planting this tree where hard conditions exist.

The white willow (*Salix alba*, variety *coerulea*), introduced from Europe, was, undoubtedly, a favorite with the early settlers, as fine trees are to be found generally throughout the coast of New England. The variety *coerulea* is the one best suited for street planting. It is not particular as to soil, and, if a little care is given to the training of a leader, it forms a fine tree. The willow does not lend itself to neat and precise, or formal work. Its value as a street tree lies in its adaptability to adverse conditions, its early budding forth in spring, and its holding its bright, shining green leaves until late in the fall.

The tulip tree (*Liriodendron tulipifera*) is another good tree for suburban and wayside planting. It is impatient of restraint or

hard usage; but, under proper conditions, it is one of the finest trees of the forest. Boston is about its northern limit for free growth.

The red oak (*Quercus rubra*) and the scarlet oak (*Quercus coccinea*) are both grand shade trees for the streets in suburban districts, or for the wayside. The prevalent notion has been that these trees are of slow growth, which accounts, in a great measure, for their not having been used for street planting. This idea is erroneous, especially as regards the red oak, which, I think, will outstrip a hard maple in growth. On the Boston parkways the red oak has been extensively planted for shade. The growth, since the trees became established, has averaged two feet each season, while in some of them a growth of from four to six feet has been made in one season. The oak will not thrive under paved street and sidewalk conditions; but no better trees can be planted for roadsides, or even for suburban streets, than the red and scarlet oaks.

The pin oak (*Quercus palustris*) is a very graceful tree in its young state. Its lower branches droop with a curved sweep to the ground, consequently it should be planted only in such positions as will allow the lower branches to be retained. As a street tree in ordinary locations this cannot be done, and the most beautiful feature of the tree is thus lost. Without its lower branches, this oak is much inferior in appearance to the red or scarlet oak. It loves moisture and can be utilized on low grounds.

The planting of street trees requires as much care as does their selection. It is not enough merely to dig a hole and crowd the roots into it. Any expectations based on such planting are doomed to end in disappointment.

If the soil is good no preparation for planting is necessary, other than loosening up the ground for each tree for a space of from seven to ten feet in diameter, and from two to three feet in depth. When the soil is poor not less than ten yards of good soil should be substituted for an equal amount of poor soil excavated from the hole. The same loosening up of the ground should be made.

If planting is worth doing at all it is worth doing well, for on this depends the well-being of the tree. It is safe to say if you have twenty dollars to spend on planting a street tree, let nine-tenths of the amount be spent on the preparation of the ground to receive it.

In the planting of groups and masses of trees on the wayside for ornamental or woodland effect, the soil should be plowed and subsoil plowed several times. The trees should be planted thickly, always remembering the old motto, "Plant thickly, but thin quickly." More trees are ruined by crowding than from any other cause. Thick planting gives the advantage of shelter; each tree helps to protect the other; and it has also the further advantage of giving a greater number of trees from which to select the permanent ones at thinning out time.

Another important point is to give the plantation clean cultivation. The treatment in this respect that will grow a good crop of corn will also grow a plantation of trees. Good tilth is both meat and drink to vegetation, in that it conserves the moisture, which assists in the decomposition of the fertilizing elements that the soil contains.

Street trees, generally, are planted too closely together. Sometimes this is done with the intention of cutting out alternate ones, as the growth of the trees requires. This, however, is seldom done, and the trees grow up too thickly, thereby overcrowding and injuring each other, destroying also the individual beauty of the trees and the symmetrical arrangement that an avenue of trees should have.

For sanitary and hygienic reasons, streets ought not to be too much shaded. The sun should be permitted to shine on the walks and on the walls of the houses in turn, as the earth moves in its course. Glimpses of light and shadow, too, have an aesthetic value, which is worth considering.

In laying out for street planting, let the first stakes be set at the street crossings. When the abutting streets also are to be planted, place two stakes at each corner, about thirty feet from the point of intersection of the curb lines on each street; then space off the intervening distance, setting the stakes equally distant apart, but not less than sixty-five feet, as the shortest distance.

Sixty-five feet apart is the minimum distance, I think, at which street trees should be planted. For large-growing trees, as the elm or the soft maple, seventy-five feet or one hundred feet apart would be none too much space to allow. Wayside or highway trees need not be set with the same precision as street trees. An irregu-

lar planting, conforming, in general, to the surrounding scenery, would be in better harmony. In places an accentuation of existing groups of trees may be all that is necessary, or simply a thinning out of over-crowding trees or of poor trees that are damaging more valuable ones; for, let it be an axiom with the tree planter who is planting for ornamental effect, never to permit the growth of one tree to injure that of another.

An important matter also in the care of trees is the pruning of all broken or diseased limbs or branches, by cutting the limbs off closely at the bole of the tree, leaving no stumps projecting, which the bark cannot grow over, to carry rot into the tree; cut off smooth and paint over the wound with coal tar.

These notes are written in the hope that they may help to intensify the interest now awakening in the planting and protection of public trees. The subject is of such importance as to merit the earnest attention of all.

The insect question I have not touched upon. This, however, is so exhaustively covered by our entomologists that no one need work in the dark for want of knowledge of how to exterminate insect pests or, at least, to hold them in check.

Discussion.

Wilfrid Wheeler inquired as to what trees were best to plant in places where they come into contact with electric wires. He had noticed that young maples grew well until they touched these wires and then they stopped further development.

Mr. Pettigrew replied that no tree does well under the influence of an electric current. Trees should be kept away from the wires or protected from them by a wooden shield. It is seldom that a current would run down a tree but if the tree was wet such a current might be formed.

William H. Spooner called attention to the lack of proper care of our city trees. He had had some experience in the careless pruning of some of his old elms by the public service men and he thought there should be some competent authority to take charge of this matter.

Mr. Wheeler stated that some towns have laws that no trees can be cut or pruned without the permission and oversight of the tree warden.

Mr. Pettigrew said that the City of Boston was exempt from the tree-warden law He thought that somebody or some department of the city should be given authority to take full charge of our city trees and to have complete power in all matters pertaining to them.

O. B. Hadwen remarked that in Worcester, where he lived, the care of the street trees was in the hands of the Park Commissioners, of which he had been a member for forty years. He had planted a great many trees, more than most other people, and had on his own estate more than a thousand specimens of one hundred different kinds; some of these he had planted sixty years ago. Mr. Hadwen advised planting trees on your own ground and then they are under your own control. In planting trees he said it is quite important that they should be sufficiently nourished. He recommended digging a generous hole in the autumn and filling it with manure, leaving it until the spring; then take out the manure and fill in with good loam, and you have a good place in which to plant a tree. There had been no part of his farming experience, he said, that had given him so much pleasure as had the planting and care of his trees.

Nathaniel T. Kidder said that there was a continual conflict between the trees and electric wires. The principal damage to the trees was caused by the chafing of the wires, and the remedy for it was putting the wires under ground, the only proper place for them.

Edward B. Wilder said he thought the Park Department should have the care of the trees in the city streets.

James Wheeler corroborated Mr. Kidder's views in regard to placing the wires under ground in the city and suburbs. Our trees are greatly damaged, he said, by the cutting and slashing of the telephone people.

SOME BACTERIAL DISEASES OF PLANTS: THEIR NATURE AND TREATMENT.

BY PROF. H. H. WHETZEL, CORNELL UNIVERSITY.

ANNUAL LECTURE UNDER THE JOHN LEWIS RUSSELL BEQUEST.

Delivered before the Society, with stereopticon illustrations, March 9, 1907.

Bacteria: Their Nature and Mode of Life

Bacteria are now usually classed by scientists as plants. In the popular mind they are, however, very generally regarded as animals. The ludicrous illustrations of these organisms in the patent medicine advertisements of the newspapers are, perhaps, largely responsible for this popular misconception. The lack of those organs, such as stems, leaves, roots, etc., which we commonly think of as parts of all plants, together with the fact that many bacteria possess organs of locomotion or propulsion has influenced the more intelligent of the laymen to class them, perhaps rather unconsciously, with the animals.

They are of all plants the smallest, some of them requiring the very highest power of the modern microscope to make them visible. The bacteria that cause the well known Fire Blight of pears and apples are so small that if placed end to end it would require 25,000 to span an inch auger hole. Although there are hundreds of species of bacteria they are all very simple in form and structure, being either globose, rod-shaped, or spiral. Those causing the diseases of plants have almost without exception the rod-shape. In structure they are very simple, consisting of a single cell, that is, a cellulose membrane or sac enclosing a living mass of protoplasm. This living protoplasm is in general appearance not greatly unlike the white of an egg. Their method of multiplication

is also very simple. When a bacterium has reached maturity it divides by a constriction at the middle into two individuals. Thus in reproduction is the parent plant ever effaced yet always perpetuated in its offspring, since each offspring is a half of the parent. Under ideal conditions of food, moisture, and temperature multiplication is amazingly rapid. Some bacteria will mature and divide in half an hour. It has been estimated that under ideal conditions a single bacterium would in two days produce no less than 281,500,000,000 descendants, or a bulk of one pint. While this could never actually happen in nature on account of the limitations of food and the accumulation of their own injurious excretions, still it gives us some faint notion of the unlimited power of increase that these minute organisms have and will help us to appreciate how the havoc wrought by some of them in our cultivated crops is possible. Many bacteria have long thread-like flagella, organs of locomotion, by the lashing of which they are able to propel themselves through the liquids in which they live. This is very generally true of those that cause diseases of plants. In order to take in food bacteria must be immersed in it. The food must be in solution in water; it must be soluble. It soaks through the enclosing membrane to the protoplasm within. In other words it is absorbed. The food of bacteria is usually the highly organized materials of other plants and animals. The great activity with which bacteria increase is largely due to the fact that these complex food materials are readily absorbed and converted into living protoplasm. The absorption of food and the consequent growth are accompanied by the excretion of certain poisonous substances by the bacteria. When produced in sufficient quantities these poisons become detrimental to the bacteria themselves, stopping their growth and multiplication. In the case of disease-producing bacteria it is these harmful excretions that are largely responsible for the injurious effects on the host.

While it is true that certain bacteria are detrimental to the general welfare of mankind by far the great majority are harmless or directly beneficial and necessary to our life and modern civilization. It is well to recall that many of the industrial arts and commercial processes such as the "retting" or maceration of linen fiber and hemp, the manufacture of vinegar, the production of indigo, the

curing of tobacco, the souring of milk, the tanning of leather, etc., are dependent upon the action of bacteria. They are at the very foundation of agriculture, being one of the chief natural factors in the production and maintenance of soil fertility. They are the most efficient scavengers of the earth, breaking down and disintegrating with incredible rapidity the dead plants and animals of the earth, reducing their complex substances to simple ones which again become available as building materials in the ever recurring cycle of growth and decay.

History of our Knowledge of Bacterial Diseases of Plants.

While we usually think of bacteria as producers of disease in man and other animals yet we are coming rapidly to the realization of their importance as related to many of the diseases of our cultivated plants. About 1880 Dr. Burrill of the Illinois Experiment Station discovered bacteria in the tissues of apple and pear trees affected with Fire Blight. In 1884, Dr. J. C. Arthur now of the Indiana Experiment Station but then of the New York (Geneva) Experiment Station showed by careful inoculation experiments that the bacteria discovered by Dr. Burrill were the responsible agents in causing the disease known as Fire or Pear Blight. In 1897 Russell and Harding of Wisconsin Experiment Station and E. F. Smith of the U. S. Department of Agriculture working independently established the bacterial nature of the Black Rot of cabbage. Following these came Stewart and Harding of New York who have added very materially to our knowledge of the Black Rot germ. Jones of Vermont and Harrison of Canada have done classical work on the Soft Rots of vegetables. There are besides these many others both in this and other countries who are adding every year to our knowledge of the bacterial diseases of plants. The whole subject is now being worked over and the scattered facts brought together by Dr. E. F. Smith of the U. S. Department of Agriculture. The first volume of his monograph entitled "Bacteria in Relation to Plant Diseases" has already appeared as a publication of the Carnegie Institution. It promises to be a landmark in this particular branch of economic science.

Some Common Bacterial Diseases of Plants.

In so limited a discussion no more than the briefest mention of the more common of these diseases can be made. From the character of the injury to the host I have chosen to classify the diseases mentioned as follows:

Blights:

- Fire Blight, of pears, apples, quinces, plums, etc.
- Mulberry Blight.
- Walnut Bacteriosis or Blight, of the Pacific Coast.
- Alfalfa Blight in the Southwest (Colo.).
- Bean Blight of beans and probably nasturtiums.

Rots:

- Black Rot of cabbage, cauliflower, and turnip.
- Soft Rots of various hosts.
  - Of turnips, cabbage, cauliflower, etc., described by Harrison of Ontario.
  - Of carrots described by Jones of Vermont.
  - Of calla lily described by Townsend, U. S. Dept. Agr.
  - Of sugar beets described by Metcalf of Nebraska.
  - Of onions described by Stewart of New York.

Wilts:

- Wilt of cucumbers, squashes, and melons.
- Wilt of potatoes, tomatoes, and egg plant.
- Wilt of sweet corn.
- Wilt of tobacco recently described from Japan.

Galls:

- Bacterial gall of the olive and oleander of the Pacific Coast.
- Bacterial root galls or nodules of the legumes.

As may be seen I have included in this list the nodule forming bacteria of the legumes. While some may object that these are not diseases since they are distinctly beneficial to the host still it seems to be quite well established that they are true parasites living in and supported by the host plant. That they are in the long run beneficial to the legume results from their peculiar habit of taking up and fixing in their own bodies the free nitrogen of the air which finally becomes available to the host plant upon the

death or deterioration of the bacteria. These bacteria live in the soil and enter the root of the host plant by way of the root hairs. Once in the root they irritate it causing the plant to form these abnormal outgrowths or swellings commonly spoken of as nodules or tubercles. In the cells of the nodules the bacteria multiply rapidly living upon the elaborated food of the host and the free nitrogen of the soil air.

I shall now take up somewhat in detail a discussion of two of our commonest bacterial diseases of plants,— Fire Blight and Cucumber Wilt. I have chosen these because both are very generally distributed over at least the eastern part of the United States and are, therefore, perhaps familiar to most of you and also because I am better acquainted with these than with any of the others.

Fire Blight of Pears, Apples, Quinces, and Plums.

This is the commonest and best known bacterial disease in this country. It is a distinctly American disease, having been known as a disease of fruit trees in eastern United States for more than a century. That it is a native of this continent seems quite certain as it is unknown in the old world, or at least has been until very recently. The bacterial nature of the disease as I have already pointed out was not discovered until about twenty-six years ago. The early horticulturists held peculiar views in regard to the nature of the malady as an examination of the early literature on the subject will show. Even at the present time we find some of these superstitions persisting among quite intelligent growers. Among the theories put forward to explain the disease may be mentioned the following: insects; rays of the sun passing through vapors; sudden changes from sod to cultivation inducing an excess of sap; freezing of unripe wood in the autumn which produced a poison in the sap or "sour sap" as it was called which killed the twigs and branches the following season; electricity, many believing the blight followed directly after a heavy thunder shower. Many others might be mentioned, in fact, almost every observer had a theory of his own. Only a few weeks ago a gentleman belonging to a prominent horticultural society gravely informed me that Pear Blight was caused by the thawing and freezing of the sap

during warm spells in winter, causing the formation of poison which when circulation set up in the spring was carried to the growing twigs and blossoms. He said further that a neighbor near him who had a large orchard made a practice of hauling ice into his orchard and distributing it about among the trees during warm spells in late winter to keep the temperature of the trees down. It may interest you to know that no less a personage then Henry Ward Beecher was an advocate of the "frozen sap" theory.

The discovery by Dr. Burrill of the bacteria in the diseased tissues of blighted twigs and the subsequent careful inoculation experiments by Dr. Arthur established beyond a doubt the true cause of the disease. Since that time much has been done by various workers to find a remedy for this most destructive malady. By far the greater part and most successful of this work has been done by Mr. M. B. Waite of the U. S. Dept. of Agriculture. He has in the last ten years carried on numerous and extensive experiments in the eastern and central part of the United States in the control of this disease by extermination. He is at present I believe directing extensive experiments in the control of the blight in California where the disease has made its appearance only in the last few years but with such destructive effects as to dismay the pear growers of that section.

The symptoms of the disease are so well known to all fruit growers that it scarcely seems necessary to detail them here. To the grower the first evidence of trouble in his trees is the apparent sudden blackening of the blossoms or the leaves on the end of twigs or spurs. Frequently the disease has extended for a considerable distance down the limb before it is noticed.

We will now take up what I may call the "annual history of the disease." We will begin with its appearance on the flowers in the spring causing what is popularly known as "blossom blight." The bacteria are introduced into the opening blossoms chiefly by bees. From whence the bees get the bacteria will be explained presently. Since practically all the blossoms on a tree are visited by bees it frequently happens that the percentage of blighted fruit spurs is very large. This is usually the first form of the disease to appear in an orchard that is in bearing. Apple growers have frequently observed that only those trees or limbs of trees that blossom suffer from the blight. The explanation as we have seen is simple.

The affected blossoms soon turn black, wither and die. The bacteria usually work their way down the flower pedicel into the spur. There they kill the bark and leaf stalks, causing the leaves to wither and dry up on the trees. Sometimes only one blossom is affected and as the bacteria usually work slowly the other fruits in the cluster may attain considerable size before the disease reaches them by way of the spur and their fruit stalk. These small fruits, often as large as a hickory nut, now show a browning or blackening of the basal portion where the bacteria are spreading and multiplying in great numbers. Such diseased fruits soon wither and drop from the tree.

During cloudy and muggy weather the blighted blossoms, spurs, and fruits are usually covered with milky drops of a sticky fluid that has oozed from the diseased tissues. An examination of this will show it to be made up almost entirely of minute rod-shaped bacteria. Under the microscope these will be seen to be in active motion like a swarm of bees in the distance. Flies and other insects visit these diseased fruits walking about and feeding upon the sticky exudate, and then flying away carry it to other fruits or more commonly to the young tender tips of growing twigs. Here as they walk about over the tender tissues with their sharp claws, or eat at the succulent growth, the bacteria with which they are smeared are introduced into the twig. The bacteria grow best in an abundance of moisture and nitrogenous food and in the young twigs they find an ideal home. After nine or ten days the infected twig begins to turn brown and then black. The leaves, especially, if it be a pear twig that is affected droop and turn black. We now have the form of the disease commonly spoken of as "twig blight." The leaves do not turn black because the bacteria get into them, as the bacteria never enter the leaf beyond the stalk or occasionally the midrib. Pear leaves when removed from the tree naturally turn black very quickly. The discoloration is due to the cutting off of the sap supply by the death of the leaf stalk. In the case of the apple and quince the disease seldom extends farther than a short distance along the twig. On these hosts the injury consists largely in the loss of fruit from the blighted blossoms and the death of the season's growth. On the pear the injury is usually more severe and extensive, often extending down the entire length of large limbs

and in some cases involving the entire tree and killing it. It is this destructive form of the disease that has earned the name "fire blight."

There is another form of the disease quite commonly overlooked or not understood by the grower. I refer to the cankers formed on the body and main limbs of the trees and known as "blight cankers" or "body blight." These cankers are for two reasons perhaps the most dangerous form of the disease. First, because they may of themselves kill a limb by girdling it or what is more often the case not kill it directly but serve as infection courts or avenues for the entrance of rot-producing fungi that soon destroy the tree by rotting the wood; and, second, because as I shall explain more fully later, they serve to carry the bacteria over from one season to the next. There are several kinds of cankers that occur on apple and pear trees. A canker may be defined as a dead spot or area in the bark of the tree. It may be rough and swollen or smooth and sunken. Blight cankers are always when first formed smooth and slightly sunken and sharply defined by a distinct crack between diseased and healthy bark. They commonly occur on the main limbs and branches of the tree. Young apple trees just coming into bearing are more commonly affected with this form of the blight than are older ones. Blight cankers vary in size from spots no larger than a dime to areas a foot or more in length and sometimes encircling large limbs. On the main limbs and upper part of the body small cankers are frequently formed. These I have called "pit cankers" from the fact that the healing callus soon forces out the dry dead bark of the diseased spot leaving a depression or pit, extending into the wood. Such cankers are dangerous only in that they serve as a point of entrance for rot fungi. Sometimes the bacteria get into the crotch of the main or secondary branches forming "crotch cankers."

These cankers just described are seldom the result of the direct introduction of the bacteria into the bark by some infecting agent. The chief avenues of entrance of the bacteria into the body of the tree are I believe through blighted spurs and water sprouts. An examination of a number of these cankers during the time when they are being formed will show at the center of almost all of them a blighted spur or shoot. The bacteria may also be introduced

by flies or other insects into accidental wounds or bruises. The pruning knife is often an efficient agent in the spread of the bacteria through an orchard. Infection at a pruned surface usually results in a collar-like canker about the pruned stub. Cankers near the base of the tree may also result from infection through wounds made by borers.

As I have already pointed out it is in these cankers on body and limbs that the bacteria live through the winter. In by far the larger number of these cankers the bacteria die shortly after the canker ceases to spread. In a few of them, however, especially those that are formed late in the fall, the bacteria remain alive, the line between the diseased and healthy tissue never becoming sharply marked by a crack or depression. These are the so-called "hold-over" cankers of Waite. During the very cold days of winter the bacteria in these hold-over cankers are more or less dormant but on warm days, especially those of March and early April, the bacteria resume activity, multiplying and working slowly down the limb in the cambium layer.

With the warm days of April and May the tree becomes gorged with sap and active and vigorous growth in the buds begins. The bacteria in the cankers also become very active, multiplying and spreading into adjoining healthy tissues. On damp cloudy days they ooze out on the surface through the lenticels in the bark in great quantities, often running down the limb as a thick milky viscid fluid. It is with this oozing material that the bees become contaminated and carry the bacteria away to the blossoms causing them to turn brown and die with the "blossom blight" as we have already seen.

This brings us to the point in the annual history of the disease from which we started. We have studied the disease in all of its different forms and phases. We have seen that the blight bacteria live continuously in the tissues of the host plant throughout the year. They are never carried by the wind and do not exist in the soil. These two facts are of much importance in simplifying the problem of controlling the disease, as we shall now see.

It is evident from what we have learned of the disease that spraying with a poison of any kind as a means of controlling Fire Blight will be of little value. The bacteria are not scattered by the wind

and cannot of themselves gain entrance into the host. They must be placed within the tissues through a wound or opening of some sort beyond the reach of externally applied poisons. Since the bacteria survive the winter only in the cankers it is evident that the careful and thorough removal of these would eradicate the disease by removing the sources of infection. The destruction of all worthless old pear trees in the neighborhood is the first step. Often one of these neglected trees along the roadway or on some abandoned farm will serve as a source of infection year after year, devastating the orchards of an entire neighborhood. As soon as the leaves have fallen in the autumn all the trees in the orchard should be gone over carefully and all the cankers removed by cutting and scraping away the diseased bark, cutting well back into the healthy tissue. The wound should then be washed out with a one-tenth per cent solution of corrosive sublimate and when dry painted over thoroughly with a heavy lead paint. It should be kept painted until completely healed. Mr. Frederick Cranefield, Secretary of the Wisconsin Horticultural Society, reports that this treatment has been most successful in repairing the injury from blight cankers on the young apple trees in their experimental orchard. Waite recommends spraying the trees just before the buds break in the spring with the lime and sulphur wash. This covers up any hold-over cankers that may have been overlooked and when the oozing bacteria come in contact with the mixture they are killed. As soon as the spurs and water sprouts begin to appear on the body and main limbs the trees should be gone over and these adventitious growths rubbed off. This will remove a very fruitful source of cankers. It will probably be necessary to go over the orchard two or three times during the season for this purpose. It will be time well spent. All blighted limbs and twigs should be cut out during the summer whenever they appear. It is well known that cultivation and the excessive use of nitrogenous manures is very favorable to the development of blight and should be avoided as far as is consistent with good horticultural practice.

The Wilt of Cucumbers, Melons, and Squashes.

As compared with the Fire Blight the Wilt of Cucumbers is of comparative recent appearance. At least it has not been sufficiently destructive to attract attention until within the last few years. It seems to be increasing very rapidly at least in New York and the New England States. It is even now one of the most destructive of cucumber diseases and bids fair to rival in severity the well-known Mildew of cucumbers and melons.

The first indication of the disease in a cucumber patch is the wilting of a leaf here and there on the vines during the heated part of the day. The leaf at first recovers during the night. After a day or two it fails to revive. If examined the leaf will show when held to the light dark water-soaked areas along the main veins, usually near the base of the blade. The diseased leaf now dries up at the top of the erect leaf stalk. The wilting of the leaf is soon followed by the wilting of all that portion of the vine from the diseased leaf to the tip and finally of the entire vine. If you cut across one of the diseased leaf stalks or wilted vines a watery liquid will ooze out. This is viscid and will draw out into long threads if the cut surface be touched with the finger and then slowly drawn away. This is a sure field test of the bacterial nature of the disease as the oozing liquid is made up of multitudes of the bacteria held together by their mucilaginous coats.

The disease frequently appears in greenhouses where cucumbers are grown out of season, especially where they are grown in late fall and early winter. I have seen entire houses just coming into bearing entirely wiped out by this disease.

The bacteria work chiefly in the sap tubes of the vine, clogging or choking them and finally destroying them altogether. They get into the leaf tissues, as I shall explain presently, and work their way through the leaf veins down the stem to the vine by way of the sap tubes. This cuts off the sap supply to the parts above causing them to wilt and die. Very often the disease finds its way into the fruit, either by way of the stem or through the blossoms. It works chiefly in the vascular region just under the skin, giving the flesh a mottled watery appearance. If the fruit is cut open the viscid liquid will ooze out. It sometimes comes out on the surface through

the skin in thick sticky drops that harden much like the gum from wounds on cherry trees. The diseased fruit, if small, shrivels and ceases to grow. In more mature fruits the bacteria work their way throughout the tissues even into the seeds.

The disease is carried from plant to plant chiefly by the striped cucumber beetle that is often so destructive to the seedling cucumbers. The large squash bugs are also agents of dissemination. These insects gnaw or suck at diseased leaves or fruits and then fly to healthy leaves where they introduce the bacteria, sticking to their mouth parts, into the wounds which they make in the healthy tissues. It is these cucumber beetles that, finding their way into the greenhouses in the autumn, carry the bacteria with them and infect the crop there. I observed in one house that the bees used for pollinating carried the infection from flower to flower. Almost every fruit was infected while yet quite small. Aphids which were present in another house seemed to be the chief agents in scattering the disease.

Just how the bacteria are carried over winter is I believe not certainly known. The beetles that are responsible for their dissemination during the summer hibernate through the winter and it seems possible that they may harbor the bacteria and thus tide the organism over from one season to the next. Since it has been observed that the bacteria get into the seed it is possible that in this way the bacteria are carried over winter in a more or less dormant condition. This would not be strange as it is known that bean blight is regularly carried over in the seed.

The methods of combating this disease must be entirely preventive. First, keep the crop as free as possible from bugs and beetles. For methods of doing this I must refer you to the entomologist; I know of no way that is entirely satisfactory. Second, remove every wilted leaf and vine as soon as it appears and destroy it. I have found it a successful practice in controlling the disease in my own garden to go through the patch every other morning very early and remove every wilted leaf, crushing it quickly in my hand thus killing the beetle that is almost invariably to be found underneath the leaf. I thus get rid of a large number of the most dangerous insects — the contaminated ones. Third, plant clean seed. Be sure the seed is from perfectly healthy fruits.

It will be safer if they are from a crop in which no blight appeared at all.

The Control of Bacterial Diseases in General.

It may be said that almost without exception spraying is of little or no value in preventing diseases of plants caused by bacteria. We must look to other means of preventing or controlling their ravages. As is the case with bacterial diseases of man and other animals, the first thing to do is to remove if possible the source of infection. Usually if the annual history of the disease is fully understood this is a relatively easy matter. When the disease appears in a crop it is often possible to do much toward its control by promptly removing and destroying all diseased plants. Even if the crop is a total loss all the diseased plants should be burned and every effort made to put the land in as sanitary a condition as possible. Avoid the planting of susceptible crops on lands known to be infected. The elimination or control of the common carriers of infection is also an important precaution. Reject seed known to be from infected lands or localities. Destroy insects that are responsible for the spread of the bacteria from plant to plant. And, lastly, what is coming to be perhaps most important of all grow varieties resistant to the disease.

Discussion.

In answer to the question "Does the fire blight attack plum trees?" the lecturer stated that the fire blight sometimes appears on the plum and the effect is the same as on the pear but more destructive. The blight is not common on the plum but occasionally appears.

William H. Spooner asked if there were not some kinds of pear trees that were not affected by the blight. He had noticed in his orchard that the Superfin pear was the only one on which it appeared.

Prof. Whetzel replied that the fire blight attacks all varieties, but it was much less frequent in orchards along lake fronts and along the seashore than in inland regions. It seems to be less common on trees growing in sod.

William N. Craig spoke of the blighting of melons and said that they could not now be grown around here on that account. On one occasion he had planted a lot of melon seeds outside and another lot of the same seed under glass. Those under glass were free from the blight while those outside were badly infected.

Prof. Whetzel said that this melon disease was probably a mildew. The fact that the wilt did not appear on the plants growing under glass shows that the disease was not carried over in the seeds.

In reply to a question the lecturer said that he had never known the cherry tree to be affected by the fire blight.

A question was asked if there was any way by which the blight bacteria could be destroyed by introducing into the fertilizer some poisonous preparation.

Prof. Whetzel replied that so far as we know there is no remedy for these diseases in feeding poisons in the plant food. The fertilizer does not reach the stems in the condition in which it is taken up by the roots. There is no very successful treatment known for plant diseases by feeding them with medicine.

An inquiry was made as to the remedy for the black-knot of plum trees.

Prof. Whetzel answered that the black-knot of the plum is very easily controlled if the knots are carefully removed. They should be cut off in September or October and burned, and if all are removed in the immediate neighborhood there would be no trouble. The affected part should be cut out two or three inches below the knot. They usually grow first on the twigs.

THE GARDENS OF ITALY.

BY JOHN K. M. L. FARQUHAR, BOSTON.

Delivered before the Society, with steropticon illustrations,
March 30, 1907.

The oldest form of Italian garden is undoubtedly the court-yard garden. This garden consisted of a geometrical arrangement of the court into formal beds and borders with convenient paths laid in mosaic or paved and embellished with statuary, sculpture, sun-dials, fountains, and stationary wash-basins of marble. Occasionally the statuary and fountains were of bronze. Pompeii had numerous gardens of this class, several of which have been restored by the Italian Government, and it is interesting to see the attendants turn the water on the fountains through the system of pyriform lead pipes which did service 2000 years ago.

The court-yard garden is of oriental idea, enclosed for protection, surrounded by an arcade on three or four sides of its rectangular area, and furnished with benches and other accessories to comfort. It was a garden for the family to live in, serving the same purpose as the small garden in the rear of the city houses of Japan, or the high-walled gardens of China, and like these existed for the family rather than for the passer-by.

The second step in garden evolution is seen in the hillside gardens. These occur chiefly throughout central Italy and mark a more advanced state of civilization, when personal security had become established, and when a wall ten or twelve feet in height afforded ample protection to the inmates of the villa. The hillside villa was usually rectangular, the house occupying the highest ground in the rear. The ground was arranged in a series of terraces which were usually separated by parapets frequently surmounted by balustrades. The terrace arrangement made the sloping ground more usable. One terrace could be arranged with arched recesses

in the retaining walls, in some of which were erected statues for ornament, and in others benches where one might enjoy a sun bath quite protected from any chilling breeze. Another terrace would be an extensive pergola, affording a pleasant, shady promenade which the summer sun could not penetrate, and where the inmate might listen to the dripping water from the fountains on a terrace yet below.

It was in these hillside gardens that the great possibilities of landscape effect dawned upon the designer. The immediate environment, often uninviting, had to be obscured. If the protecting wall ten or twelve feet high was insufficient screen, it could be supplemented by a screen of *cipresso*, the delicate cypress, the fine foliage scales of which distinguished it from the pines and firs, and the graceful tapering form of which carries the gaze of the observer to the distant surroundings. In these hillside gardens there were usually two flights of steps, protected at least on one side with parapet walls or balustrades. The purpose of the arrangement was, if possible, to render the hillside more habitable and make it as it were an outer living room.

It must be noted that through these stages of development the Italian garden remained strictly formal, and its lines were made to harmonize with those of the architecture to which it was linked. It had three chief elements — marble, water, and the foliage — flowers were incidental.

An enlargement of the hillside villa marked the third stage of evolution, and brings us to the elaborate garden of the Renaissance. The terrace was broadened into an elaborate geometrically aranged area, in which were disposed sculpture, statuary, sundials, and benches of marble. Flower beds were arranged in elaborate geometrical design, and numerous architectural features were introduced, such as well-heads, pergolas, fountains, cascades, and other ornaments.

It is this enlarged garden, in its great variety of character and feature, yet always rigidly formal, that has aroused so much interest and the desire on the part of many garden lovers in this country to reproduce it here.

About Naples we find the slopes of the hills covered with compact walled villas arranged with convenient paths, a few cypresses stand-

ing like sentinels about the house, here and there an olive, orange or lemon tree, and an abundant growth of figs and grapevines.

In Rome the villas average larger; they are more elaborate and contain a greater variety of trees, shrubs, and plants. The celebrated Villa Borghese is a beautiful public park with fine drives, interesting groves of umbrella pine, hedges of ilex and boxwood, the latter frequently forming a background for statuary. It is well kept and contains numerous elaborate flower beds. Flower beds are frequently arranged with a statue for a centerpiece. Such a bed in the Borghese has for its center an unknown statue found in the Forum; for its edging coral rock, inside of which were planted rows of white-leaved gnaphalium, pink ivy-leaved geraniums, and white Paris daisy, in the order named; behind these followed blue ageratum, balsams, scarlet salvia, African marigolds, cannas, dahlias, New Zealand flax, and Abyssinian banana. The only thing Italian in character in such a flower bed is the statue in the center; the floral treatment is borrowed from western Europe and is quite out of place. In Rome there are many beautiful water gardens and one is often surprised at the great effects produced with a comparatively small flow.

In southern Italy a large portion of the villa is generally devoted to fruit culture, especially figs and grapes. The latter are supported on live elms or poplars whose trunks and short pruned limbs serve as trellises.

Florence undoubtedly holds first place for beautiful environment and fine villas. The famous Boboli garden of the Medici family is one of the largest and best preserved. It is entered through an avenue arched with ilex trees, leading to a vast amphitheatre at the rear of the Pitti Palace. It contains many fine avenues which are perfectly straight, and to me much less interesting than the beautiful Rampa farther up the hill. The Rampa is a public driveway leading along the face of the mountain, lined on both sides with charming villas, and commanding a fine view of the city and its surrounding mountains. Its culminating point, the Piazza Michael Angelo, a magnificent terrace affording a commanding view of the vast amphitheatre-like landscape in the city of art, forms the arena.

In Florence and northwards, garden arrangement has suffered encroachment of the ideas of western Europe, and it is only in the

more neglected gardens that the architectural features of the sixteenth century remain. Many of the older villas have been occupied by foreigners, and foreign ideas, chiefly French and English, have been introduced. The architectural garden, too, affords little opportunity for elaborate floral display, and it has been ruthlessly modified to overcome this limitation.

Whenever we find elaborate garden decoration it follows French ideals, the only difference being that the colors harmonize better and the designs are more graceful in form than the French.

The grounds of the Milan Exposition last year were profusely planted with formal flower beds and borders, all of refined and tasteful arrangement, but there was not a single example of the old Italian style of planting. The Italian garden of the sixteenth century is virtually a thing of the past. It is not built in Italy now and in but rare instances are the old ones kept up. Expense of construction and maintenance seems to stand in the way. There is also a taste for more lavish floral display to which the arrangement of the old garden is not adapted.

We also find in the north of Italy occasional fine examples of natural gardening. In these the most notable feature is the skill with which the gardener uses water in his composition. In American gardens we have hardly used water — we use it in our parks — why not in our gardens?

The best examples of Italian gardens in this country are much more floral than perhaps any in Italy. There the flowers are a secondary consideration, here the garden exists for them. A natural garden is a much better home for flowering plants than an architectural one on the Italian plan; yet there are many features of the Italian garden which may be profitably introduced here. It will be prudent to say, however, that it should never be attempted upon a small scale or where there is any thought of economy. It is expensive to build, expensive to plant, and the most expensive of all gardens to maintain. Yet there are instances where a modified Italian garden may be advantageously introduced. It may be made a suitable setting for an imposing residence, and its features may add much to an architectural design. The present method of using cement, where cut stone was formerly used, will reduce the cost of construction. Almost any kind of stone may be closely imitated

by mixing the stone, crushed, with the outer layer of cement. Even the pergola — pillars and roof — may now be reinforced cement construction which, if well done, should last as well or better than stone.

The beautiful cypress is not hardy in our climate, but we have a satisfactory substitute in the pyramidal arbor vitæ, *Thuya occidentalis pyramidalis*.

Water may be profitably introduced as an element of garden construction. Water pipes and basins must, however, be arranged so as to be thoroughly drained off during winter to avoid injury by frost.

To maintain a continuous floral display the plants must be frequently renewed. In many of the older gardens of Italy we find the floral collection confined almost exclusively to pots and vases. In an old garden in Naples last summer I found growing in pots and vases amaryllis, agave, carnations, chives, chamaerops, chrysanthemums, euonymus, lantana, pheasant-eye pink, pelargonium, and phormium, while I found only fourteen kinds of flowering plants growing in the grounds, of which only two — petunia and amaranth — were in bloom.

The Italian garden as a whole is not to be recommended for general adaptation here. There are of course exceptional places like two of our beautiful estates in Brookline, a new estate at Sharon, Connecticut, and the vast estate of Biltmore, where it may be appropriately used.

American conditions differ from those of any other country and no imported style exactly fits them. Each garden location calls for a particular style of treatment which will fit its conditions and environment, and I am forced to the conclusion that in the majority of cases the more natural the arrangement, the more satisfactory will be the result. Where a formal treatment is inevitable, the English terrace garden with a single parapet will usually be found more satisfactory than the elaborate and expensive sixteenth century garden, which the Italians themselves no longer build.

TRANSACTIONS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY

FOR THE YEAR 1907

PART II

PUBLISHED BY THE SOCIETY
BOSTON
NINETEEN HUNDRED AND EIGHT

TRANSACTIONS

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Massachusetts Horticultural Society

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Massachusetts Horticultural Society.

1907

The Transactions of the Society are issued annually in two parts under the direction of the Committee on Lectures and Publications.

Communications relating to the objects of the Society, its publications, exhibitions, and membership, may be addressed to William P. Rich, Secretary, Horticultural Hall, No. 300 Massachusetts Avenue, Boston, Massachusetts.

Committee on Lectures and Publications.

William P. Rich, *Chairman*
J. Woodward Manning
Walter S. Parker
John A. Pettigrew
Edward B. Wilder
E. W. Wood

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

1907, PART II.

REPORT OF THE BOARD OF TRUSTEES FOR THE YEAR 1907.

The Board of Trustees of the Massachusetts Horticultural Society respectfully presents herewith a summary of the business transacted during the year 1907. Seven meetings of the Board have been held with an average attendance of eight members.

January 5. A communication from Col. David Prain of Kew, England, was read expressing his thanks for the honor of election to corresponding membership in the Society.

A communication from Otis Norcross, Esq., for self and co-executors of the Estate of Charles E. French, was presented notifying the Society that it was entitled to two legacies of $3000.00 and $5000.00 respectively, under the will of the said Charles E. French. The following votes were passed accepting the legacies:

Voted: To accept the legacy of three thousand dollars bequeathed to this Society by the will of Charles E. French, late of Boston, and to hold the same, to be known as the "Benjamin V. French Fund, Number Two," in trust, to expend the income therefrom in prizes for the best specimens of such fruit or vegetables as may be selected by the Trustees of this Society; and it was further

Voted: To accept the legacy of five thousand dollars bequeathed to this Society by said will of Charles E. French and to hold the same, to be known as the "John Allen French Fund," in trust, to distribute the income therefrom in prizes for such specimens of flora as the Trustees may select.

The resignation of the Treasurer of the Society and Superintendent of the Building, Charles E. Richardson, was read and accepted to take effect January 15, 1907. On motion of Mr. Craig it was voted to appoint a committee of three to draw up resolutions on the retirement of Mr. Richardson as Treasurer. The President appointed as this committee Messrs. Craig, Hunnewell, and Elliott.

Prof. Sargent, chairman of the committee appointed at the previous meeting to investigate and report upon the administration of the affairs of the Society's building, presented a report in which the following recommendations were offered:

The resignation at this time of the Treasurer, Mr. Richardson, after many years of faithful service, makes the election of a new Treasurer necessary and opens the question of the advisability of our following the example of other Boston corporations of a semi-public nature, like the Museum of Fine Arts, The Institute of Technology, the Massachusetts Society for Promoting Agriculture, etc., in choosing an unpaid Treasurer from the business men interested in the Society.

Your committee believes that if it was possible to put the management of this building in the hands of one man, duties then can be better defined and responsibility fixed. This means efficiency and economy.

It recommends, therefore, that Mr. Walter Hunnewell, who has expressed a willingness to assume the duties of the office, be elected Treasurer of the Society, that Mr. William P. Rich be elected manager of the building, Secretary, and Librarian, with the understanding that it shall be a part of his duty to render such assistance to the Treasurer as may be decided on between them.

Your committee further recommends that in order that Mr. Rich may be able to perform satisfactorily the duties of his office he be authorized to employ an assistant who shall be a stenographer and accountant. If this plan is adopted, it is perhaps possible that the expenses of administration can be reduced.

On motion of Mr. Lawrence it was voted that the report of the committee be accepted and its recommendations adopted.

On motion of Mr. Farquhar it was voted to appoint Mr. Walter

Hunnewell Treasurer of the Society with power to select his assistant; the appointment to date from January 15, 1907.

On motion of Mr. Hill it was voted to appoint Mr. William P. Rich Secretary and Librarian of the Society, Superintendent of the Building, and assistant to the Treasurer; the last two appointments to date from January 15, 1907.

Mr. Hunnewell, Chairman of the Finance Committee, presented a statement of the income and expenditures of the Society during the past year.

Mr. Craig spoke on the matter of the appropriations for prizes for the year and suggested that additional prizes be secured through special subscriptions. He had already the promise by several interested members of the Society of additional prizes for the Chrysanthemum Show and recommended that some action be taken by the Board of Trustees to authorize and encourage further subscriptions.

Mr. Farquhar spoke in favor of the suggestions of Mr. Craig and it was voted, on motion of Mr. Craig, that a committee of five be appointed to attend to this matter. The President appointed as the committee Messrs. Craig, Fewkes, Farquhar, and Lawrence, to whom was added the President, Mr. Weld.

On motion of Mr. Pettigrew it was voted that a committee be appointed to consider the advisability of opening the library one or two nights in a week for the benefit of those unable to make use of it during the present hours, which are 9 to 5 week days. The President appointed Messrs. Pettigrew and the Librarian as this committee to report at the next meeting.

Miss S. Myrta Abbott of Cambridge, proposed by Henry S. Adams, and Everett P. Turner of Arlington, proposed by J. Willard Hill, were elected to membership in the Society.

February 9. Communications from Henry N. Ridley and Miss E. Willmott were read accepting their election to corresponding membership in the Society.

The President, as chairman of the special committee on the improvement of the lecture hall of the Society's building, presented a report with several suggestions on the subject. On motion of

Mr. Farquhar it was voted that the President and one other member be appointed to procure an estimate of the cost of the work and to report back to the Board. The President appointed Prof. Sargent on this committee.

The committee appointed at the last meeting to draw up resolutions on the occasion of the retirement of Charles E. Richardson from the office of Treasurer of the Society reported through its chairman, Mr. Craig, as follows:

The Board of Trustees of the Massachusetts Horticultural Society desire to express and place on record their high appreciation of the faithful services rendered by Mr. Charles E. Richardson, who retired on January 15, 1907, after filling for over sixteen years the responsible office of treasurer of the Society.

The Trustees as a body feel that they and the Society are much indebted to Mr. Richardson for the careful and painstaking manner in which he has performed the duties of his office, and earnestly express the hope that he may be long spared to enjoy his well-earned retirement.

Resolved:— That a copy of these resolutions be forwarded to Mr. Richardson and spread upon the records of the Board.

(Signed) William N. Craig
Walter Hunnewell
William H. Elliott.

The report of the committee was adopted.

Mr. Walter C. Baylies was elected a Trustee in accordance with the By-laws to fill the vacancy existing in the Board occasioned by the death of Mr. Fabyan.

The sum of $400.00, in addition to the income of the French and Farlow Funds, was voted for the library.

The matter of the appointment of an auditor was considered and it was voted that all bills for current expenses be approved before payment by the President or a member of the Finance Committee.

The President reported a communication from Arthur Lord, Esq., concerning a proposed settlement of the Francis B. Hayes Estate and it was voted that the matter be referred to Messrs. Hill and Hunnewell with authority to employ counsel and to report back to the Board.

On motion of Mr. Craig it was voted to appoint a committee of

three to prepare a memorial of the late George F. Fabyan and to report at the next meeting of the Board. The President appointed Messrs. Craig, Hunnewell, and Curtis as this committee.

April 6. William N. Craig, chairman of the committee on a memorial of the late George F. Fabyan, reported the following resolutions:

The Trustees of the Massachusetts Horticultural Society desire to express and place on record their sincere sorrow at the death on January 18 of Mr. George F. Fabyan, for several years an esteemed member of this Board.

Although, owing to ill health, Mr. Fabyan had not for some time been able to attend the Board meetings, he always maintained a keen interest in the welfare of the Massachusetts Horticultural Society by frequent exhibits of splendidly grown plants from his greenhouses which have been features of the exhibitions, and in various other ways assisting in promoting the cause of horticulture.

Resolved:— That in the death of Mr. Fabyan the Massachusetts Horticultural Society has lost a valued supporter and

Resolved:— That these resolutions be entered upon the records of the Board and a copy forwarded to Mrs. Fabyan and family.

(Signed) Wm. N. Craig
Walter Hunnewell
Charles F. Curtis.

The report of the committee was adopted and ordered to be placed upon the records of the Board.

John A. Pettigrew, chairman of the special committee appointed to consider the advisability of opening the library of the Society at other times than those now in force, reported as follows:

Your committee, appointed to report on the desirability of affording members of the Horticultural Society and the public increased opportunity for using the library of the Society, would report that it has duly considered the matter and believes that there is a considerable number of persons whose business will not permit them the privilege of using the library during the hours when it is now open, who would welcome the opportunity to use it were it open during some portion of their leisure.

This applies especially to garden employées who have little time and are not over-burdened with means; yet, it is largely upon such men that the present and future success of practical horticulture depends.

We believe that the Massachusetts Horticultural Society, by offering young gardeners the use of its library, will be fulfilling an important part of its mission — the advancement of horticulture.

With this presentment, your committee would recommend that, as an experiment, the library of the Society be opened each Sunday from two to six o'clock P. M. for the use of members and such persons who are not members as may be accredited by the ticket of the Society; the privilege to include permission to take books home for perusal under such regulations as may be prescribed by the librarian; applications for library privileges by non-members, as above stated, to be made to the librarian who shall investigate and report, with a recommendation in each case, to the Library Committee for approval.

We further recommend that the librarian be authorized to employ such assistance as may be necessary to carry out the work efficiently, yet with economy.

Respectfully submitted,

(Signed) J. A. Pettigrew
Wm. P. Rich
Committee.

The report of the committee was accepted and its recommendations adopted; and the committee was empowered to carry into effect the proposed opening of the library on Sunday afternoons.

A communication from Mrs. Lemuel Skidmore of Summit, New Jersey, was read, stating that on the death of Miss H. F. W. Sweetser, the last member of the family of Samuel Sweetser, formerly of Cambridge, Massachusetts, and a member of the Massachusetts Horticultural Society from 1835 to 1870, there was found among her papers a request that the portrait of her father be presented to this Society.

Mrs. Skidmore wrote that the portrait was ready for delivery if acceptable to the Society.

It was voted to accept the portrait of Mr. Sweetser with thanks to Mrs. Skidmore for her interest in the matter.

A communication from Senor Don Salvador Izquierdo of Chile was read accepting the honor of corresponding membership in the Society.

On motion of Mr. Fewkes it was voted to invite the New England Dahlia Society to hold its annual exhibition in conjunction with the September Exhibition of the Massachusetts Horticultural Society.

At the suggestion of William H. Spooner, Delegate to the State

Board of Agriculture, it was voted to appoint a committee to represent the Society at the Conference on Rural Progress to be held in Amherst, October next, under the auspices of the Massachusetts Agricultural College.

The President appointed the following named members of the Society as this committee: William H. Spooner, Chairman, Charles F. Curtis, Wilfrid Wheeler, J. Willard Hill, Wm. P. Rich, Henry S. Adams, Isaac H. Locke, and Arthur H. Fewkes.

The resignation of William C. Endicott as chairman of the special committee on certain protested awards was accepted and William H. Spooner was appointed in his stead.

The following named persons were duly elected to membership in the Society:

Nathaniel W. Emerson, M. D., of Boston, proposed by Wm. P. Rich.

Miss Elizabeth M. Eustis of Brookline, proposed by Wm. P. Rich.

Frank L. Whipple of Lynn, proposed by Wm. P. Rich.

Clement S. Houghton of Boston, proposed by Warren H. Manning.

Charles Merriam of Weston, proposed by Herbert Merriam.

May 11. A communication from the secretary of the New England Dahlia Society was read accepting with thanks the invitation to hold its first annual exhibition in connection with the Dahlia Exhibition of the Massachusetts Horticultural Society.

A communication from the New York Academy of Sciences was presented cordially inviting the Massachusetts Horticultural Society to participate in its exercises commemorative of the two hundredth anniversary of the birth of Linné. On motion of Mr. Estabrook a committee consisting of Mr. Curtis and the Secretary was appointed to arrange for the representation of the Society on that occasion.

On motion of Mr. Estabrook an appropriation not exceeding $150.00 was voted for the purchase of rugs or carpeting for the ladies' waiting room.

On motion of Mr. Farquhar it was voted that the Secretary be,

authorized, on approval of the Finance Committee, to make expenditures to the amount of $250.00 at any one time for the repair or improvement of the Society's building, when such repair or improvement will facilitate the rental of the halls.

Mr. Farquhar stated that it was desirable to issue the Schedule of Prizes and Exhibitions for the year 1908 at as early a date as possible, and he moved and it was voted that the sum of $6700.00 be appropriated for prizes and gratuities for the coming year.

It was also voted that the Committee on Prizes and Exhibitions be authorized to proceed at once with the preparation of the Schedule for 1908 and to report the same to the Board for adoption.

The following named persons were elected to membership in the Society:

Miss Mary St. Barbe Eustis of Brookline, proposed by Wm. P. Rich.

Samuel J. Goddard of Framingham, proposed by Wm. N. Craig.

George William Butterworth of South Framingham, proposed by J. T. Butterworth.

John W. Bennett of Springfield, Vermont, proposed by A. S. Bigelow.

July 8. President Weld reported plans and estimates for the improvement of the lecture hall, and, on motion of Mr. Farquhar, it was voted that the President and the Secretary be authorized to have the work completed in accordance therewith.

On motion of Mr. Hunnewell it was voted that Mr. Farquhar and the Secretary be authorized to procure one hundred additional exhibition tables at a cost not to exceed $500.00.

The following named persons were elected to membership in the Society:

Louis E. Merry of West Somerville, proposed by H. A. Wheeler.

Mrs. J. D. Colt of Chestnut Hill, proposed by Maurice Fuld.

Juan Balme, Jr., of Mexico, proposed by Wm. P. Rich.

October 5. A communication from Messrs W. W. Rawson &

Co. was presented offering two silver cups as prizes; one to be awarded at the Spring Show of 1908 for the largest and best collection of narcissi and daffodils, and the other for the largest collection of Cactus dahlias at the Dahlia Show of that year.

On motion of Mr. Curtis it was voted to accept the offer of the Messrs. Rawson and to refer it to the Committee on Prizes and Exhibitions.

It was voted also, on motion of Mr. Curtis, to authorize the Treasurer to pay the prizes awarded by the Committee on Children's Gardens as soon as convenient.

On motion of Mr. Farquhar it was voted that the matter of continuing the Sunday opening of the library be left to the discretion of the Librarian.

A communication from the secretary of the Maine State Pomological Society was read requesting the Massachusetts Horticultural Society to send a delegate to its annual meeting at Gardiner, Maine, in November, for the purpose of considering the fruit interests of New England. On motion of Mr. Hunnewell it was voted to appoint the Chairman of the Committee on Fruits, Mr. Wilfrid Wheeler, to represent the Society on that occasion with power of substitution.

Mr. Farquhar called attention to the need of a new floor in the large exhibition hall of the Society's building, and, after some consideration of the subject, the President appointed Messrs. Farquhar, Hunnewell, and the Superintendent of the Building a committee to report on the matter at a future meeting.

The following named persons were elected to membership in the Society:

Charles N. Brush of Brookline, proposed by A. F. Estabrook.
George H. Webster of Haverhill, proposed by J. F. Sharkey.
Robert Seaver of Jamaica Plain, proposed by C. F. Curtis.
Arthur F. Means of Somerville, proposed by F. S. Davis.

December 7. A communication from Edwin L. Lewis of Taunton was presented suggesting that state institutions and agricultural colleges be required to exhibit their productions under their respective names and not in the names of the gardeners only.

As Rule 9 of the General Rules and Regulations provides for such cases it was voted to call the attention of the chairmen of the exhibition committees to this rule and to notify all parties interested that hereafter exhibits must be made in the name of the owners.

The special committee on protests appointed at the meeting held December 8, 1906, presented its report as follows:

A meeting of the Committee on Protests of the Massachusetts Horticultural Society having been duly called, and the protestants of the vegetable awards at the Exhibition of October 10, 1906, having been duly notified that the Committee would hear them, was held in the Committee Room of the Society on November 21, 1907, at 2.30 P. M. Of the Committee there were present the Chairman, Mr. William H. Spooner, and Mr George E. Cabot. Of the protestants, Mr. E. L. Lewis, and on behalf of the Committee which awarded the prizes, Mr. W. H. Heustis.

Mr. Lewis was called upon to give his reasons for protesting the awards, and the Committee listened to his reasons at length upon the subject.

Mr. Heustis was then asked to state for the Committee on Prizes his views as to the justice of the awards, and thereafter these gentlemen withdrew.

The Committee unanimously

Voted:— That having heard the protest of Mr. Lewis, and the statement of Mr. Heustis for the Vegetable Committee of 1906, and after giving the matter careful consideration, they are of the opinion that the Vegetable Committee awarded the prizes according to their best judgment, and without bias.

Voted:— That in the opinion of the Committee a rule should be added to those now in force that all exhibits grown on the grounds of Public Institutions should be exhibited in the name of the Institution and not entitled to compete for prizes other than gratuities.

Voted:— That in the opinion of the Committee all awards made by the several Exhibition Committees should be final.

Respectfully submitted,

GEORGE E. CABOT,
For the Committee on Protests.

It was voted that the report of the Committee on Protests be accepted and placed on file.

Mr. Pettigrew, chairman of the special committee on nominations for the Standing Committees of the Society for the year 1908, presented a list of names which, after some modification, was accepted as follows:

Committees of the Massachusetts Horticultural Society for the Year 1908.

Finance: — Walter Hunnewell, Chairman, A. F. Estabrook, Stephen M. Weld.

Library: — C. S. Sargent, Chairman, Larz Anderson, C. S. Minot, R. M. Saltonstall, H. P. Walcott.

Lectures and Publications: — John C. Olmsted, Chairman, Miss Mary S. Ames, W. H. Spooner, Miss Mary L. Ware, F. A. Waugh.

Prizes and Exhibitions: — J. K. M. L. Farquhar, Chairman, W. N. Craig, Edw. MacMulkin, C. S. Sargent, W. J. Stewart.

Plants and Flowers: — T. D. Hatfield, Chairman, Joseph Clark. Duncan Finlayson, Emil Johanssohn, Thos. Roland.

Fruits: — Wilfrid Wheeler, Chairman, Wm. Thatcher, E. B. Wilder.

Vegetables: — J. B. Shurtleff, Jr., Chairman, J. W. Duncan, G. D. Moore.

Gardens: — C. W. Parker, Chairman, J. H. Bowditch, R. Cameron, A. H. Fewkes, J. Heurlin, F. L. Olmsted, Jr., W. P. Rich, S. M. Weld, T. H. Westwood.

Children's Gardens: — Mrs. R. G. Shaw, Chairman, Miss Helen Collamore, Mrs. E. M. Gill, Miss Rose Hollingsworth.

On motion of Prof. Sargent it was voted to instruct the new Committee on Prizes and Exhibitions to prepare the Schedule for the year 1909 and publish it May 1, 1908.

Mr. Hill offered the following motion which was adopted: That in the opinion of the Board of Trustees it is desirable that the Committee on Prizes and Exhibitions be a slowly changing body and that only one or two of its members should be changed each year, and that special committees on nominations in the future are hereby instructed to carry this recommendation into effect.

On motion of Mr. Farquhar an appropriation of $250.00 was voted for the expenses of conducting the exhibitions for the year 1908.

President Weld reported for the special committee on the im-

provement of the lecture hall that the work had been completed in a satisfactory manner and that the acoustic defects had been remedied.

On motion of Mr. Craig it was voted that this Society become an affiliated member of the National Chrysanthemum Society and an appropriation of $50.00 was made for this purpose.

Mr. Farquhar reported that one hundred new exhibition tables had been provided in accordance with the vote of the Board July 8 at a cost of $475.00.

The following named persons were elected to membership in the Society:

Mrs. Clarence W. Jones of Brookline, proposed by C. W. Parker.
Arthur G. Walton of Wakefield, proposed by W. P. Rich.
Scott T. Doten of Brookline, proposed by J. K. M. L. Farquhar.

On motion of Prof. Sargent it was voted to approve the election of Dr. Augustine Henry of Cambridge University, England, as a Corresponding Member of the Society.

William P. Rich,
Secretary.

REPORT OF THE COMMITTEE ON PRIZES AND EXHIBITIONS FOR THE YEAR 1907.

BY JOHN K. M. L. FARQUHAR, CHAIRMAN.

The exhibitions of the year have surpassed those of any previous year since the Society occupied its new hall. The appropriation for prizes for last year was less than usual, and, in order to get out an attractive schedule, your Committee thought it well to solicit special prizes from persons, chiefly members of the Society, interested in our work. The appeal was heartily responded to.

The Spring Exhibition was perhaps the best of the year and one of the finest spring shows ever held by the Society. It comprised a wider range of flowering plants than has been seen for many years, and the display of spring bulbous plants was exceptionally good.

The Summer Shows were better than ever before, and were never so well attended. Most of them were held open to the public Sunday afternoons, the attendance frequently being so large as to tax the capacity of the halls.

The Fruit and Vegetable Exhibition was distinguished for the fine quality of the exhibits, which were much above the average in excellence. The vegetable exhibits at the November Exhibition were unquestionably the best ever seen in Boston. This last exhibition known as the Chrysanthemum Show was not as strongly representative of that flower as usual, but the deficiency was more than compensated for by the fine display in other lines. A new feature on this occasion was a display of artistically arranged tables of fruit and also table decorations of chrysanthemums in bloom, both of which subjects were extremely interesting.

It is gratifying to your Committee to report the unusually large attendance of the public at the exhibitions throughout the year, demonstrating a growing interest, and showing that the educational work of the Society carried on in these halls is appreciated. This

appreciation of the public assures us that the Society is faithful to the unselfish, uplifting, educational work for which it at first received its charter as a public educator and benefactor.

JOHN K. M. L. FARQUHAR
WILLIAM N. CRAIG
ARTHUR H. FEWKES
ISAAC H. LOCKE
WILLIAM H. SPOONER
WILFRID WHEELER

Committee on Prizes and Exhibitions.

SPRING EXHIBITION, 1907: DISPLAY BY HARVARD BOTANIC GARDEN

REPORT OF THE COMMITTEE ON PLANTS AND FLOWERS FOR THE YEAR 1907.

BY ARTHUR H. FEWKES, CHAIRMAN.

The report of the Committee on Plants and Flowers for the year 1907 varies little from those of recent years except in the number of awards, where a considerable falling off is noted.

The awards of all kinds made during the year were six hundred and fifteen, while the report for 1906 shows a total of seven hundred and forty, a falling off for the present year of one hundred and twenty-five or about seventeen per cent.

The number of exhibitors for the year was one hundred and fifty-six, an increase of six over the previous year, showing a continued interest on the part of the exhibitors.

The falling off in the number of awards must be attributed largely to the heavy reduction made in the appropriation for plants and flowers for the present year, necessitating a curtailment of the prizes offered.

The extremely dry weather of midsummer tended to reduce the number of exhibits of that season, but this was more than counterbalanced by the abundant moisture and cool temperatures prevalent during the spring months, conditions which proved favorable for all kinds of spring bulbs and herbaceous plants as was shown by the numerous and fine displays during April, May, and early June.

The first exhibition of the year was held January 26 and proved a remarkably good show for this season of the year, there being competition in nearly all of the classes.

Among the miscellaneous displays the seedling carnation Victoria was shown by the Quidnick Greenhouses. It is a promising variety, light cerise in color.

February 2, Martin Sullivan, gardener for William Whitman, showed a fine specimen plant of *Cattleya trianae* for which he was

awarded a First Class Certificate for superior cultivation. The plant was in splendid condition and well flowered.

The Spring Show, March 22, 23, 24, was a most successful one, filling all three of the halls. There were fifty-four classes offered and all but six were competed for.

The Acacias were remarkably beautiful and there was an unusual number of distinct species shown. Azaleas were somewhat better than they have been for several years but they fell far short of what we should have at this exhibition.

A few fine Ericas were shown but there seems to be a lack of interest in the growing of these plants which is unfortunate, for they are among the most beautiful of exhibition subjects.

The climbing roses in tubs made a fine display but were not equal to previous years. There was little competition in the Cyclamen classes but nevertheless there was a good show of them as there were many fine plants not in competition.

Cinerarias were fairly good and all kinds of Dutch bulbs were well shown.

The displays of tender roses and carnations were fully up to the standard, particularly the latter.

Among the miscellaneous displays there were many of great merit and special awards were given them.

R. & J. Farquhar & Co. received a Silver Medal for a very superior group of spring bulbs and plants. George Page was awarded a cultural First Class Certificate for two very fine plants of Marguerite Queen Alexandra, and M. H. Walsh a First Class Certificate for a beautiful new seedling rambler rose, the Milky Way. The flowers are single, pure white in color, very freely produced, and resemble very much the Cherokee rose.

Honorable Mention was awarded Joseph Breck & Sons for a display of palms and bulbous plants in flower, arranged in brass-bound oak jardinières. The display was made to show off the latter to the best advantage, but at the same time the exhibit was worthy of special notice. Honorable Mention was also awarded W. W. Rawson & Co. for a display of spring bulbs arranged in the form of a large bed placed on the floor of the vestibule, just inside the main entrance, where it formed a very striking feature of the exhibition.

Another display which attracted much attention and formed an important part of the exhibition was the exhibit of Cyclamen plants from J. Henry Brooks of Milton. The plants were of very large size although only eighteen months from seed. They were finely flowered and showed great skill in their cultivation, securing for the gardener who grew them, George M. Anderson, a Silver Medal for cultivation.

Two well-grown plants of *Genista Canariensis* were exhibited by Thomas Roland of Nahant. They had been trained in a somewhat formal conical shape and were a complete mass of bloom.

Calanthe vestita igneo-oculata gigantea shown by Lager and Hurrell is a very fine orchid bearing flowers of large size with a fiery-red eye which shows to great advantage against the white of the petals. A First Class Certificate was awarded this.

First Class Certificates were also awarded J. E. Rothwell for the beautiful pure white *Dendrobium nobile virginale*, a variety absolutely pure white and a great acquisition; To Genl. S. M. Weld for *Primula Kewensis*, the new yellow-flowered hybrid Primula which originated at Kew gardens, with quite large bright yellow flowers arranged in whorls in the manner of *Primula verticillata*; and to Kenneth Finlayson for seedling Himalayan Rhododendron Mary Weld, which has a beautiful waxy white flower with fine fragrance, and resulted from Rhododendron Princess Mary Fitzwilliam × *Rhododendron Veitchii laevigata*.

Honorable Mentions were awarded William Whitman for a very fine plant of *Cattleya Schroederae* bearing eight spikes of bloom; Julius Roehrs Co., for the new Azalea Julius Roehrs, a rosy-pink colored variety which promises well for winter forcing; and to R. & J. Farquhar & Co. for Begonia Gloire de Lorraine superba, a variety of apparently stronger habit and with larger flowers than the type.

The same firm also received Honorable Mention for the new Pelargonium Mme. Thibaut.

There were several other plants from various growers which were so well grown that cultural awards were given them. The most noticeable being the Acacias exhibited by Walter Hunnewell and grown by his gardener, T. D. Hatfield, who was awarded a Silver Medal for superior cultivation.

Thomas Watt was awarded a Certificate for the cultivation of a magnificent Azalea plant exhibited by Mrs. H. F. Durant for whom Mr. Watt is gardener.

James Crosbie, gardener for Mrs. J. W. Tufts, showed a splendid plant of *Dendrobium nobile* for which he received a Cultural Certificate, and Martin Sullivan the same award for superior cultivation of spring bulbous plants. Mr. Sullivan is gardener for Mr. William Whitman and the numerous plants shown by him were all of such uniform good quality that the committee felt it their duty to make this recognition of his cultural skill.

On April 20 William C. Rust, gardener for Dr. C. G. Weld, brought in a magnificent plant of the Himalayan Rhododendron Lady Mary Fitzwilliam. The plant was very even in form and fully five feet in diameter. The fine healthy condition of the plant and abundant bloom showed great skill in cultivation of this difficult class of plants and a cultural Silver Medal was therefore awarded Mr. Rust.

The exhibition on May 4 was a very good one although the cool weather had retarded all spring bulbs.

Narcissuses were particularly good; there seems to be an increasing interest in these beautiful flowers and more attention should be given them.

Owing to the lateness of the season the display of tulips was small.

Among the miscellaneous displays a large plant of *Cattleya Mossiae* was shown by J. T. Butterworth. It was a magnificent plant bearing fifty-nine blooms. As the plant had but forty-four blooms the previous year there could be no doubt of the skill of the cultivator and a cultural Silver Medal was awarded him.

Another orchid plant, *Cattleya Skinneri,* shown by William Whitman, Martin Sullivan, gardener, though very much smaller than the preceding, was a fine specimen of this beautiful species and was adjudged worthy of Honorable Mention for superior cultivation.

Honorable Mention was awarded Mrs. Frederick Ayer for *Acacia pulchella,* a beautiful species, not new, but seldom seen.

The same award was given the Harvard Botanic Garden for *Primula Poissoni.*

A display of much merit, made by Mrs. Frederick Ayer, consisted of long branches and sprays of the Marechal Niel rose. It is many years since this fine rose has been shown here and we doubt if it was ever shown in better form. A First Class Certificate was awarded George Page, her gardener, for superior cultivation.

On May 18 there was a fine showing of spring bulbs and herbaceous plants, the continued cool weather proving very favorable, prolonging the season of flowering of the bulbous plants and developing the herbaceous plants to perfection.

A First Class Certificate was awarded R. & J. Farquhar & Co for an instructive display of single and double tulips, embracin eighty-one different varieties.

Again on May 25 there was a fine display of spring bulbs, particularly the Darwin and other late-flowering tulips. The collection of these from the Langwater Gardens was remarkably fine and included about twenty-two varieties. Nearly all of them were shown in large bunches thereby giving an entirely different impression of them than would be possible to produce where only two or three flowers of a kind are shown. A First Class Certificate was awarded this display.

Narcissus Glory of Leiden, one of the newer varieties was also shown from the Langwater Gardens. It is an extremely beautiful flower, larger than Emperor, with rich yellow trumpet and light yellow petals.

Cereus speciosus was shown from the Botanic Garden. It has a beautiful flower, crimson in color, shaded purple and rainbow tints. Honorable Mention was awarded this.

A new hybrid Calceolaria called *Stewartii* was shown by T. D. Hatfield. It is a cross between *C. rugosa* and a yellow-flowered herbaceous variety. The flower is clear yellow, much larger than *rugosa* with the habit midway between the parents. It was originated by George Stewart of Medford and named for him. A Silver Medal was awarded Mr. Stewart for this.

The Rhododendron Show was scheduled for June 1 but owing to the extreme lateness of the season it was postponed to June 8 and again to June 15 and 16.

Although the regular exhibition was postponed on June 8 there

was a very fine lot of flowers shown, making one of the best of our early summer shows.

Tree peonies were shown in larger quantities and in better form than ever before. Prof. C. S. Sargent and William Whitman made excellent displays, particularly the former who filled an entire table with blooms of this beautiful plant. They were all seedlings raised from seed of the best named varieties and included single, semi-double, and full-double in a great variety of colors. A Silver Medal was awarded Prof. Sargent for this display.

A Silver Medal was also awarded R. & J. Farquhar & Co. for the new *Spiraea Japonica* Queen Alexandra. The flowers were a pleasing shade of pink in color and made a very handsome pot-plant, a use for which this plant is more adapted than for open ground culture.

Syringa pubescens was shown by Prof. C. S. Sargent and was awarded Honorable Mention. It is a fine species similar to *Persica* but with the flowers in closer spikes.

Honorable Mention was also awarded Dr. C. G. Weld for a fine vase of lily-of-the-valley grown in the open ground.

A Cultural Certificate was awarded James Crosbie, gardener for Mrs. J. W. Tufts, for a well-grown plant of *Clerodendron Balfouri.* It was a remarkably good specimen nearly six feet in height.

Late tulips were still in good condition and were well shown by W. W. Rawson & Co. and Harvard Botanic Garden.

The late tulips have been greatly neglected in this country and the fine displays of them which have been made in our halls from week to week should give an impetus to their cultivation here. These with the fine varieties of narcissi are worthy subjects for all who love the spring garden.

Although the Rhododendron Show was postponed to June 15, the displays of these flowers were very meager; nevertheless, the exhibition as a whole was a very creditable one, there being a large number of miscellaneous displays of much interest. The displays of German irises were remarkably fine excelling any previous displays of this flower. Tree peonies were again shown in splendid form by Prof. Sargent and James McKissock, the latter staging a very beautiful and instructive collection of named French varieties, including many rare colors.

A number of special awards were made to exhibits of special merit including Honorable Mention to Mrs. David S. Greenough for a beautiful white tree peony with very long petals artistically arranged. The variety was without name it being an imported plant from Japan, the native name of which having been lost.

Honorable Mention was awarded the Boston Park Department for a vase of the beautiful Bechtel's double-flowering crabapple, *Malus Ioensis*, fl. pl. The flowers are like small pink roses of a soft apple-blossom shade and borne in great profusion.

Cereus Eyresii was shown by the Harvard Botanic Garden and awarded Honorable Mention. It is a handsome flower of a beautiful rose-pink shade.

The collection of tree peonies from Mr. James McKissock, mentioned above, was awarded Honorable Mention it being the finest collection of named varieties ever shown here.

Three new herbaceous plants were shown by the Blue Hill Nurseries and were all awarded Honorable Mention: *Thalictrum Delavayi*, with spikes of large rosy-purple flowers and prominent petaloid sepals; *Arenaria montana*, a fine species with large white flowers; and *Incarvillea grandiflora*, similar to *I. Delavayi*, but much darker and more crimson in color.

The show on June 22, though postponed, was still too early for a good display of peonies and little out of the ordinary was shown in these flowers. There were remarkable displays of German irises and herbaceous plants from R. & J. Farquhar & Co., Blue Hill Nurseries, and F. J. Rea.

The display of R. & J. Farquhar & Co. filled four large tables and was awarded Honorable Mention.

The display of Pyrethrums from William Whitman should also be mentioned for we have seldom if ever seen a display equal to it.

The displays of Pyrethrums, irises, and other herbaceous plants at this show as well as at previous ones were remarkable for the quantity of blooms shown of each variety, for most of them were represented by large vases of each variety or species and not by a few individual blossoms or sprays.

The exhibition held June 29 was remarkable for the fact that most of the rose and peony classes, scheduled for June 14, 15, and 22, were competed for at this time, no entries having been made

for them on the scheduled dates owing to the extreme lateness of the season.

The exhibit of hardy rhododendrons and Kalmias from Walter Hunnewell was also indicative of the lateness of the season, for probably these flowers have never been shown in Boston later than this date.

Among the miscellaneous displays Honorable Mentions were awarded Frederic J. Rea for *Iris orientalis* Snow Queen, a beautiful pure white form of this plant; E. J. Shaylor for seedling peony Number 2; George Hollis for seedling peony Geo. Hollis; Dr. Charles S. Minot for the French peony Mons. Charles Leveque; Wm. Whitman for a beautiful display of Digitalis; and to J. Lawson, gardener to Edward J. Mitton, for superior cultivation of *Crassula coccinea.*

A First Class Certificate of Merit was awarded J. E. Rothwell for his seedling Cypripedium Emil Johanssohn. It is the result of *C. Euryale* × C. *Philippinense.* In color it is similar to its seed parent while the form of the flower resembles the pollen parent, with a tendency to produce several flowers on each spike.

A First Class Certificate was also awarded James McKissock for the new peony Rosa Bonheur, a beautiful shade of pink in color and of good form.

A Cultural Certificate was awarded James Cartwright, gardener to J. R. Leeson, for a splendid plant of *Oncidium sphacelatum.*

The extraordinary change in the weather conditions following the very moist and cool spring was noticeable in the exhibitions of July 6 and 13. The sudden change to hot and dry weather was very detrimental to out-door flowers and materially lessened the displays. There were some fine things shown, however, including a remarkably well-grown plant of *Odontoglossum citrosmum,* with immense bulbs and branching spikes of unusual length. The plant was exhibited by J. T. Butterworth and a Cultural Certificate was awarded him for it.

A Cultural Certificate was also awarded James Crosbie, gardener to Mrs. J. W. Tufts, for a large plant of *Crassula coccinea,* bearing one hundred and sixty heads of bloom.

First Class Certificates were awarded the Langwater Gardens for two very handsome varieties of *Gladiolus nanus* Peach Blossom,

delicate salmon-pink in color, and Mathilde, a beautiful pearly white.

The same exhibitor was awarded Honorable Mention for new sweet peas, Queen Alexandra, a promising scarlet variety, and Nora Unwin, an improved white variety.

Honorable Mention was also awarded George Hollis for his seedling peonies Lucy E. Hollis, a flower of fine form, deep rosy flesh in color, and Mary L. Hollis, a salmon flesh variety.

The new sweet william, Sutton's Pink Beauty, was shown by the Lowthorpe School of Horticulture and awarded Honorable Mention. It is a pleasing shade of pink but not remarkable in form of flower.

On July 13 Mr. C. W. Parker was awarded Honorable Mention for an exhibit of hardy roses grown at his place in Marblehead. They were of good size and showed but little the effects of the prevailing dry weather.

July 20 was Sweet Pea Day and proved one of the best exhibitions of the summer. The wisdom of devoting special days to the exhibition of the most popular flowers was most decidedly apparent at this show, for never before has the sweet pea, in all its beautiful shades, been so thoroughly shown here as at this exhibition. Every class was well competed for, there being as many as sixteen competitors in some of them.

The exhibition was highly appreciated both by the growers and the public, who attended in large numbers.

As a matter of record we give herewith a list of the varieties which seemed to be most popular, naming only those which appeared the greatest number of times in competition. In white varieties we name Dorothy Eckford and Mont Blanc; in light pink or blush, Gladys Unwin, Lovely, and Countess Spencer; in rose color, John Ingman; in blue or purple, Navy Blue and King of the Purples; in lavender, Mrs. George Higginson and Countess of Radnor; in red or crimson, King Edward VII; and in orange or salmon, Helen Lewis and Miss Willmott.

Miscellaneous displays were quite numerous and some very good things were shown, the most noticeable being a display of herbaceous Delphiniums from James McKissock. They were imported varieties from Lemoine and included some of the finest

kinds we have ever had the pleasure of seeing. They were in the various shades of blue, some of them being shaded with pink, and all double. We selected the following as the cream of the collection and awarded them a First Class Certificate, viz.: Arago, Frederic Mistral, Laplace, Albert Metin, Maxime Gorki, Dupleix, Statuaire Rude, Romeo, and Compte Horace de Choiseul.

A First Class Certificate was awarded H. H. Rogers (James Garthly, gardener) for a display of stocks of great merit. They were from the open ground and included a large range of color, illustrating well the usefulness of this plant when well grown.

A Cultural Certificate was awarded W. W. Rawson & Co. for an exceedingly well-grown plant of the yellow perennial larkspur *Delphinium Zalil.* The plant was very large, bushy, and well flowered.

Burpee's Crystal Queen nasturtium with variegated foliage was shown by Geo. E. Davenport and was awarded Honorable Mention. The foliage was distinctly marked with white, the flowers deep crimson. If the variegation is well fixed it is a very good thing in its way.

The exhibition on August 3 was a small one but there were some good phloxes shown for the prizes offered and other things not in competition.

Nicotiana affinis hybrida was shown by W. W. Rawson & Co. and was awarded Honorable Mention. As shown the flowers were much better than *N. Sanderi*, larger and with a greater range of color.

Dahlias made their first appearance at this exhibition. They were shown by W. W. Rawson & Co. and were very good for so early in the season.

On August 17 there was a very fine display of perennial phloxes, the later varieties being in good condition, having been affected less than the earlier sorts by the dry weather. There were also good displays of herbaceous plants, sweet peas, asters, and gladioli; the whole making an interesting summer show.

The Dahlia Show, September 4 and 5, proved a very successful affair. This was a departure from the time-honored Annual Exhibition which had ceased to be attractive in many of its features. The great interest which has sprung up in recent years in the

cultivation of the dahlia has made it very desirable that a special show be held in the interests of this flower, and a change in the designation of the fall show seemed no more than was due to so important a flower as the dahlia and one to which such widespread interest is directed.

The exhibition was, without doubt, the largest and best showing of dahlias that has ever been made here and much credit is due the New England Dahlia Society for its efforts in making it a success, it being the first annual meeting of that organization.

Besides the dahlias and hardy herbaceous flowers, for which prizes were offered, there were many miscellaneous displays of much value, all combining to make a fall show of great interest and of an entirely different character from the stereotyped exhibition of former years. There were entries in nearly all the dahlia classes and in most of them the competition was very keen, the number of entries in all amounting to sixty-four.

Special awards were given as follows: to Frederic J. Rea, a First Class Certificate for *Helenium autumnale superbum rubrum*, a handsome variety of this useful plant, with brown-red flowers; to A. H. Wingett a First Class Certificate for seedling dahlia Charles Lanier, a fine large show bloom with perfect form and deep yellow color; and to B. Hammond Tracy First Class Certificates for Gladioli Kathryn, Princess Sandersoni, and Jean Dieu la Foy, and Honorable Mention for Harvard.

The variety Kathryn has a large open flower, good spike and deep rosy-carmine in color, with white throat blotched with crimson. Princess Sandersoni is pure white with the lip slightly blotched yellow, shaded and marked maroon. It is a fine variety and is a selection from White Sandersoni. Jean Dieu la Foy has a fine open flower and long spike of cream white flowers blotched with crimson. Harvard has a large open flower in good spikes. The color is a deep shade of brownish crimson.

The varieties Kathryn and Harvard were exhibited as original seedlings but since the above awards were made information has come to us that this is incorrect and that prominent gladiolus growers pronounce the former to be the variety Rosella and the latter the variety George Paul. It is desirable that these varieties may be shown side by side the coming season so the matter may be cleared up.

H. A. Dreer Co. showed two new ferns for which they received Honorable Mention: *Nephrolepis todeaoides* and *Nephrolepis Amerpohli.* The former is similar to *Barrowsii* but with pinnae more feathery and compact. The latter has very finely divided fronds similar to *elegantissima* but much more finely divided.

Honorable Mention was awarded Laban Pratt for a display of single dahlias which were remarkable in size and fine colors.

The same award was given R. & J. Farquhar & Co. and W. W. Rawson & Co. for fine displays. The former was composed of *Lilium auratum, L. tigrinum, L. speciosum,* and *L. Philippinense,* all shown in large vases.

The latter was composed of dahlias and filled one of the largest tables, the award being given particularly for the excellent arrangement of the flowers which showed the decorative qualities of the dahlia in a marked degree. These qualities were also shown, although in a much different manner, by Sidney Hoffman who placed on exhibition a large centerpiece composed of red and crimson varieties, a wreath of white varieties, and a large hand-basket filled with pink varieties. They were beautifully arranged and showed the adaptability of the flower for this kind of work. A First Class Certificate was awarded him for arrangement.

At the Fruit and Vegetable Show, October 10 and 11, the display of plants and flowers was not large but there were several of considerable interest, among them a display from Wm. C. Strong of branches cut from seedlings of Weir's Cut-leaf maple. There was a great variety of forms including specimens which were reduced to leaves scarcely more than skeletons, to those which were but slightly changed from the original form. Honorable Mention was awarded Mr. Strong for this display.

On October 26 Walter H. Murdock brought in a plant of chrysanthemum Mrs. A. T. Miller for which he was awarded Honorable Mention. It is a very large incurved Japanese variety, pure white in color and very early as was evidenced by the condition of the flower, it being much past its prime. It should make a valuable early variety.

The Chysanthemum Show was held November 8, 9, and 10. Formerly this was essentially an exhibition of chrysanthemums but the name is fast losing its significance.

The large trained specimen plants for which Boston was once famous seem to be a thing of the past for they were entirely absent, and it is worthy of note that this was the first November show for many years that has been without them. In the opinion of many the loss is not to be regretted for it is claimed that it is an unnatural mode of growth for the plant and that it is against good taste to torture them into these conventional forms. But be this as it may, there was much cultural skill displayed in their production and the result was not without value in a decorative way. They lacked grace perhaps but there was a certain beauty of form and display of color that cannot be produced in any other manner, and they will be greatly missed until some other plant or some other equally effective method of growing and exhibiting the chrysanthemum is brought forward.

In cut chrysanthemums there was a very good showing but there seemed to be a lack of life to the competition, even in these. The classes for flowers on long stems seemed to bring out the strongest competition and many remarkably fine blooms were shown.

The special prizes were also quite successful, the competition being quite keen in those offered for roses and carnations. The decorated tables, while not coming up to expectations, were, nevertheless, an attractive feature of the exhibition and in some respects were worthy of repetition.

The miscellaneous displays made an important part of the exhibition and special awards were given several of them.

A Silver Medal was given Robert Scott & Son, Sharon Hill, Pennsylvania, for their new rose, Mrs. Jardine. It is a hybrid tea similar in color to Bridesmaid but more cupped in form and with a fine rose odor.

First Class Certificates were awarded W. A. Manda Inc. for *Dracaena Mandaiana,* a variety in the way of *terminalis* but with broader leaves and richer in color; F. R. Pierson Co. for a new fern, *Nephrolepis superbissima,* a very dwarf crested form with pinnae much twisted and matted; and R. Vincent Jr. and Sons Co. for display of pompon chrysanthemums which included nearly one hundred varieties.

A Cultural Certificate was awarded Wm. C. Rust, gardener to Dr. C. G. Weld, for a plant of *Odontoglossum grande* bearing an immense spike with nine very large flowers.

Honorable Mention was awarded Julius Roehrs Co. for *Cyclanthus bipartitus* and *Ludovia crenifolia.* The former is a plant in the way of Aspidistra but with biparted leaves. The latter is a plant with broad equitant leaves with crenulated edges.

Honorable Mention was also awarded to Mrs. J. M. Sears for a collection of forty different varieties of single and anemone-flowered chrysanthemums of large size and striking form; and to Geo. H. Hale for a fine display of single-flowered chrysanthemums.

There were several new seedling carnations shown and the following were awarded Honorable Mention: Albert Roper's, seedling Number 1000, similar in color to Mrs. Thomas W. Lawson, but larger and a better flower; S. J. Goddard's seedling Priscilla, a large white, striped variety which should prove of much value if the stem is sufficiently stiff; Wanoka Greenhouses' seedling Apple Blossom, a promising large variety, white, delicately shaded pink; M. A. Patten's seedling Number 50–24, a promising large flower of a fine dark crimson color and strong stems of medium length, and seedling Number 133, another crimson variety in the way of Harry Fenn but with smoother flowers.

On December 28 Honorable Mention was awarded T. T. Watt, gardener to Mrs. H. F. Durant, for superior cultivation of *Lopezia macrophylla.* Although the specific name was incorrect the plant was well grown and made a very attractive specimen two feet in height and a foot through, covered with spikes of small pink flowers.

In conclusion we will say that, from impressions received from actual contact with the exhibitors and the exhibitions we are led to believe that the policy of encouraging the small summer exhibitions with prizes offered for special flowers which appeal to the grower of moderate means is a wise one, as has been amply proven the past season. It is at these shows that the amateur with notebook in hand will be most often seen, taking notes of such plants as appeal to him the most because they are something that he can grow himself in his own garden. We believe the influence of these shows is far reaching in its effects and has done more to encourage horticulture in New England than any other one thing, and any movement which would tend to discourage them is a step backward and a distinct injury to the cause of horticulture.

The benefit to be derived from the association of persons of

kindred tastes is of inestimable value and the weekly coming together here in our halls of so many lovers of the garden and all that pertains to it has bred a horticultural atmosphere about Boston that cannot be found in any other part of the country.

We are impressed with the belief that these shows are a distinct feature and should be looked upon as a separate line of work from the large spectacular shows where the principal idea is to make a beautiful effect thereby attracting a large number of people who have no special interest in horticulture but who find it a pleasant way of spending a little time. The influence of these large shows is exerted in an entirely different direction and everything possible should be done to make them attractive by the introduction of new features, the exhibition of fine specimens, and the artistic arrangement of displays.

The number of awards of all kinds made during the year was 617.

The amount appropriated for the committee was	$3154 00
Amount expended in money prizes, gratuities, and medals	2764 75
Unexpended balance	389 25

In addition we have expended the following:

Henry A. Gane Memorial Fund	$20 00
Gardeners' and Florists' Club, special prize	25 00
Subscriptions for special prizes at the Chrysanthemum Exhibition	450 00

We have also awarded

Thirty-five First Class Certificates

Five Cultural First Class Certificates

Forty-two Honorable Mentions

Sixteen Votes of Thanks.

A detailed list of awards is appended to this report.

PRIZES AND GRATUITIES AWARDED FOR PLANTS AND FLOWERS.

1907.

January 26.

Primula Sinensis.— Six plants, in not less than six-inch pots:
1st, William Whitman, $5; 2d, C. R. Talbot, $3; 3d, William Whitman, $2.

Primula stellata.— Six plants, in not less than six-inch pots:
1st, William Whitman, $5; 2d, Mrs. J. L. Gardner, $3; 3d, William Whitman, $2.

Primula obconica Varieties:— Six plants:
1st, William Whitman, $6; 2d, Mrs. J. L. Gardner, $3; 3d, William Whitman, $2.

Violets.— Best bunch, one hundred blooms, Double:
1st, H. F. Woods, $3; 2d, N. F. Comley, $2; 3d, N. F. Comley, $1.

Best bunch, one hundred blooms, Single:
1st, H. F. Woods, $3; 2d, N. F. Comley, $2; 3d, C. S. Strout, $1.

Carnations.— Best vase, twenty-five blooms, White:
1st, C. S. Strout, Lady Bountiful, $4.

Scarlet:
1st, C. S. Strout, Robert Craig, $4; 2d, H. A. Stevens Co., J. H. Manley, $3.

Light Pink:
1st, H. A. Stevens Co., Seedling, $4.

Daybreak-colored variety:
1st, C. S. Strout, Enchantress, $4; 2d, H. A. Stevens Co., Melody, $3.

Crimson:
1st, H. A. Stevens Co., Harry Fenn, $4.

Striped:
1st, H. A. Stevens Co., Variety of Lawson, $4.

Any other color:
1st, H. A. Stevens Co., Seedling, $4.

Gratuities:—

Mrs. J. L. Gardner, *Primula stellata* Ruby Star, $2.
William Whitman display of Primulas, $2.
" " *Cattleya Trianae*, $2.

SPRING EXHIBITION, 1907: DISPLAY IN LECTURE HALL

Spring Exhibition.

March 22, 23, 24,

Theodore Lyman Fund.

Indian Azaleas.— Six distinct named varieties:
1st, William Whitman, $15; 2d, James Stuart, $10; 3d, E. W. Breed, $8.

Society's Prizes.

Palms.— Pair, in pots or tubs:
1st, Mrs. Frederick Ayer, $12; 2d, William Whitman, $10.

Ericas.— Six plants, not less than three species:
1st, Mrs. Frederick Ayer, $12.

Orchids.— Three plants, distinct:
1st, William Whitman, $10; 2d, J. E. Rothwell, $6; 3d, James Stuart, $4.

Acacias.— Specimen plant:
1st, Mrs. Frederick Ayer, $10; 2d, James Stuart, $6.

Twelve plants, not over three feet in height, not less than three species:
1st, Thomas Roland, $10 and a Silver Medal; 2d, Mrs. Frederick Ayer, $8.

Climbing Rose.— Specimen plant, in bloom:
1st, M. H. Walsh, $10; 2d, M. H. Walsh, $6.

Rambler Roses.— Six plants in pots, at least three varieties:
1st, M. H. Walsh, $15 and a Silver Medal.

Hardy Primroses and Polyanthuses.— Twelve plants of distinct varieties:
1st, William Whitman, $6; 2d, William Whitman, $4; 3d, Mrs. A. W. Blake, $2.

Cyclamens.— Ten plants in not over seven-inch pots:
1st, Dr. C. G. Weld, $12.

Group, arranged for effect:
1st, James Stuart, $20.

Cinerarias.— Six varieties:
1st, James Stuart, $15; 2d, J. H. Brooks, $10; 3d, Mrs. J. L. Gardner, $6.

Specimen plant:
1st, James Stuart, $4; 2d, William Whitman, $3; 3d, James Stuart, $2.

Cineraria stellata.— Six plants:
1st, William Whitman, $12; 2d, William Whitman, $8; 3d, Mrs. J. L. Gardner, $6.

Hyacinths.— Three pans, not to exceed twelve inches:
1st, William Whitman, $10; 2d, Mrs. J. L. Gardner, $6.

Single pan not to exceed twelve inches, with ten bulbs of one variety:
1st, William Whitman, $5; 2d, Mrs. J. L. Gardner, $4; 3d, William Whitman, $3; 4th, Mrs. A. W. Blake, $2.

Tulips.— Six eight-inch pans, nine bulbs of one variety in each:
1st, William Whitman, $8; 2d, Mrs. A. W. Blake, $6; 3d, Mrs. J. L. Gardner, $4.

Three eight-inch pans, nine bulbs of one variety in each:
1st, William Whitman, $4; 2d, Mrs. A. W. Blake, $3; 3d, Mrs. A. W. Blake, $2.

Jonquils.— Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, William Whitman, $4; 2d, Mrs. J. L. Gardner, $3; 3d, William Whitman, $2.

Narcissuses.— Six eight-inch pots, distinct varieties, single or double:
1st, William Whitman, $10; 2d, Mrs. J. L. Gardner, $6; 3d, William Whitman, $4.

Three eight-inch pots:
1st, William Whitman, $5; 2d, William Whitman, $3; 3d, Mrs. A. W. Blake, $2.

Schizanthus.— Six plants in pots:
1st, Mrs. J. L. Gardner, $5; 2d, Mrs. J. L. Gardner, $3.

Amaryllises.— Six pots, distinct varieties:
1st, Mrs. J. M. Sears, $15; 2d, James Stuart, $10.

Collection of Herbaceous Spiraeas.— Not less than three varieties:
3d, Mrs. J. L. Gardner, $4.

Group of Easter Flowering Plants.— Arranged for effect with palms or other foliage:
1st, Sidney Hoffman, $25.

Forced Bulbs.— (*For amateurs only*) Six pans, six inches in diameter, grown without aid of frame or greenhouse:
1st, Margaret A. Rand, $10.

General Display of Spring Bulbous Plants.— All classes:
1st, William Whitman, $30.

Special Prizes offered by the
Julius Roehrs Company, Rutherford, N. J.

(To Private Gardeners Only.)

For the best group of hard-wooded flowering greenhouse plants, such as Acacias, Camellias, Azaleas, etc.:
1st, Mrs. J. L. Gardner, $15.

Society's Prizes.

Tender Roses in vases.— Twelve blooms of American Beauty:
1st, Waban Rose Conservatories, $15.

Twenty-five blooms of The Bride:
1st, Waban Rose Conservatories, $10.
Twenty-five blooms of Bridesmaid:.
1st, Waban Rose Conservatories, $10.
Twenty-five blooms of Liberty or Richmond:
1st, W. H. Elliott, $12; 2d, Exeter Rose Conservatories, $8.
Twenty-five blooms of any other variety:
1st, W. H. Elliott, Killarney, $10; 2d, Exeter Rose Conservatories, Mme. Abel Chatenay, $6; 3d, Exeter Rose Conservatories, $4.

Carnations.— Vase of one hundred blooms, of one variety, with foliage:
1st, Albert Roper, $10; 2d, F. R. Pierson Co., $8.
Twenty-five blooms of any named Crimson variety:
1st, Wilfrid Wheeler, $5; 2d, S. J. Goddard, $4; 3d, Backer & Co., $3.
Twenty-five blooms, Dark Pink:
1st, E. A. Wood, $5; 2d, Backer & Co., $4.
Twenty-five blooms, Light Pink:
1st, S. J. Goddard, $5; 2d, Backer & Co., $4.
Twenty-five blooms, Scarlet:
1st, S. J. Goddard, $5; 2d, C. S. Strout, $4; 3d, F. R. Pierson Co., $3.
Twenty-five blooms, White:
1st, S. J. Goddard, $5; 2d, C. S. Strout, $4; 3d, Mrs. A. W. Blake, $3.
Twenty-five blooms, Yellow Variegated:
1st, Wilfrid Wheeler, $5; 2d, Backer & Co., $4.
Twenty-five blooms, White Variegated:
1st, H. A. Stevens Co., $5; 2d, F. R. Pierson Co., $4; 3d, Backer & Co., $3.
Twenty-five blooms, Daybreak colored:
1st, E. S. Grew, $5; 2d, S. J. Goddard, $4; 3d, C. S. Strout, $3.

Pansies.— Forty-eight cut blooms, not less than twenty-four varieties, in flat dishes:
1st, Mrs. E. M. Gill, $3; 2d, H. A. Jahn, $2; 3d, N. F. Comley, $1.

Violets.— Bunch of one hundred blooms of any Double variety:
1st, Louis Smith, $3; 2d, H. F. Calder, $2; 3d, E. Bingham, $1.
Bunch of one hundred blooms of any Single variety:
1st, N. F. Comley, $3; 2d, E. Bingham, $2; 3d, H. F. Woods, $1.

Camellias.— Twelve cut blooms:
1st, Mrs. J. M. Sears, $5; 2d, James Stuart, $3; 3d, William Whitman, $2.

Orchids.— Display of not less than six genera and fifteen named species and varieties, filling not less than twenty bottles:
1st, J. E. Rothwell, the Appleton Silver Gilt Medal.

Prizes for Non-Commercial Growers only.

Tender Roses in vases.— Twelve blooms of The Bride:
1st, J. H. White, $6.

Twelve blooms of Bridesmaid:
1st, J. H. White, $6.
Twelve blooms of any other variety:
1st, F. Heeremans, $6; 2d, J. H. White, $4.

Gratuities:—

Edward MacMulkin, display of Spring Bulbs and Plants, $25.
W. W. Rawson, Beds of Spring Bulbs and Plants, $15.
Harvard Botanic Garden, display of Decorative Foliage and Flowering Plants, $50.
Dr. C. G. Weld, display of Decorative Flowering Plants, $25.
W. W. Rawson, display of Herbaceous Plants and Bulbs, $10.
H. H. Rogers, display of Plants, $15.
J. R. Clarke & Co., Herbaceous Plants, $4.
Mrs. H. F. Durant, specimen plant of Azalea, $10.
Mrs. J. L. Gardner, display of *Primula obconica*, $2
Gen. S. M. Weld, " " " " $2.
Mrs. J. M. Sears, display of Amaryllises, $5.
Lager & Hurrell, display of Orchids, $6.
Mrs. H. F. Durant, " " " $5.
Julius Roehrs Co., display of Foliage Plants and Orchids, $8.
William Nicholson, vase of new Carnation Afterglow, $5.
J. M. Cushing, vase of seedling Carnation Victoria, $1.
Thomas Stock, vase of *Centaurea cyanus*, $1.
N. F. Comley, vase of Mignonette, $1.
Mrs. E. M. Gill, display of Flowers, $1.

May 4.

Pelargoniums.— Six named Zonale varieties, in bloom:
1st, William Whitman, $8.
Tulips.— Forty-eight blooms, not less than twelve named varieties:
1st, William Whitman, $5; 2d, W. J. Clemson, $3.
Darwin.— Collection of twelve named varieties, one twelve-inch pan of each:
1st, William Whitman, $12.
Late Single, including Bizarres, Bybloemens, and Roses, twelve named varieties, one twelve-inch pan of each:
1st, William Whitman, $12.
Hardy Narcissuses.— Collection of fifty vases, of not less than ten named varieties:
1st, Langwater Gardens, $15; 2d, William Whitman, $10; 3d, W. J. Clemson, $6.
Pansies.— Forty-eight blooms, not less than twenty-five varieties, in flat dishes:
1st, Mrs. A. W. Blake, $3; 2d, Mrs. E. M. Gill, $2.

Gratuities:—

William Whitman, display of Pelargoniums and Tulips, $4.
Mrs. A. W. Blake, display of Narcissuses, $3.
" " " Alpine Primulas, $3.
" " " Himalayan *Rhododendron formosum*, $2.
William Whitman, Cattleyas, $4.
Mrs. Frederick Ayer, display of Marechal Niel Roses, Iris, and Marguerite, $5.
Mrs. Frederick Ayer, *Acacia pulchella*, $4.
Harvard Botanic Garden, display of Spring Flowers, $8.
Mrs. E. M. Gill, display of Flowers, $2.

May 18.

Gratuities:—

Harvard Botanic Garden, display of Herbaceous Plants, $6.
Blue Hill Nurseries, " " " " $5.
William Whitman, Geraniums and Pelargoniums, $5.
" " general display of Tulips, Hyacinths, etc., $4.
Mrs. E. M. Gill, display of Flowers, $2.

May 25.

Gratuity:—

T. D. Hatfield, display of Hybrid *Calceolaria Stewartii*, $4.

Rhododendron Exhibition.

June 8.

Wistaria.— Two plants, in tubs:
1st, R. & J. Farquhar & Co., $20.

H. H. Hunnewell Fund.

Hardy Azaleas.— Twelve varieties, six trusses of each, displayed on beds of moss in baskets:
1st, William Whitman, $10; 2d, Mrs. A. W. Blake, $6.

Society's Prizes.

Tree Peonies.— Not less than five varieties:
1st, William Whitman, $10.
Hardy Herbaceous Flowers.— Distinct species and varieties, not less than ten genera, grasses admissible, thirty bottles:
1st, Blue Hill Nurseries, $10.

Gratuities:—

J. E. Rothwell, display of cut Orchids, $15.
Mrs. J. W. Tufts, display of Hybrid, shrubby *Calceolaria Stewartii*, $4.
" " " specimen plant of *Clerodendron Balfouri*, $4.
Blue Hill Nurseries, *Primula Sieboldi*, Tulips, Aquilegias, and Lilacs, $5.
R. & J. Farquhar & Co., display of Tulips and Narcissuses, $10.
W. W. Rawson & Co., display of late Tulips, $3.
Harvard Botanic Garden, display of late Tulips and Herbaceous Plants, $6.
W. Heustis & Son, display of Hardy Shrubs, $6.
R. & J. Farquhar & Co., display of Herbaceous Plants, $8.
Mrs. E. M. Gill, display of Flowers, $3.

June 15 and 16.

German Irises.— Thirty-six vases of three trusses each, of not less than twelve varieties:
1st, T. C. Thurlow & Co., $5; 2d, William Whitman, $3.

Gratuities:—

Walter Hunnewell, display of Rhododendrons, plants and cut flowers, named, $20.
Mrs. J. L. Gardner, display of Rhododendrons, $8.
Mrs. R. A. Leeson, display of Rhododendrons and Azaleas, $2.
William Whitman, Hardy Azaleas and Tree Peonies, $2.
Prof. C. S. Sargent, Seedling Tree Peonies, $5.
James McKissock, display of Tree Peonies, $3.
Mrs. J. L. Gardner, display of German Iris, $1.
F. J. Rea, display of German Iris and Herbaceous Plants, $3.
R. & J. Farquhar & Co., display of Herbaceous Plants, Aquilegias and German Iris, $15.
Blue Hill Nurseries, display of Herbaceous Plants, $10.
Mrs. E. M. Gill, display of Flowers, $1.
George Page, " " " $1.

Rose and Peony Exhibition.

June 22 and 23.

Sweet Williams.— Display, eighteen vases of three trusses each, not less than six varieties:
3d, J. R. Clarke & Co., $1.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties, not less than ten genera, grasses admissible:
1st, Blue Hill Nurseries, $8; 2d, Blue Hill Nurseries, $6.

Herbaceous Peonies.— Specimen bloom, Double:
2d, William Whitman, $1.

Collection of twelve or more named varieties, Single:
1st, William Whitman, $4; 2d, George Hollis, $3.

Vase of blooms on long stems, arranged for effect in the Society's large China vases:
1st, Mrs. J. L. Gardner, $10; 2d, E. L. Lewis, $6; 3d, Mrs. J. L. Gardner, $4.

Vase of twenty-five blooms, Double, White or Blush:
1st, Blue Hill Nurseries, Festiva maxima, $5; 2d, Mrs. E. M. Gill, Festiva maxima, $3; 3d, E. L. Lewis, Whitleyi, $2.

Twenty-five blooms, Pink or Rose:
1st, Blue Hill Nurseries, Camille Calot, $5.

Twenty-five blooms, Red or Crimson:
1st, E. L. Lewis, Rubra triumphans, $5; 2d, Blue Hill Nurseries, Felix Crousse, $3.

Twenty-five blooms, any other color:
1st, William Whitman, Magnifica, $5; 2d, Blue Hill Nurseries, Pulcherrima, $3.

(For Non-Commercial Growers Only.)

Collection of twelve named varieties, Double, one flower of each:
1st, Mrs. J. L. Gardner, $6; 2d, I. L. Blanchard, $4.

Gratuities:—

E. J. Shaylor, display of Peonies, $6.
Mrs. E. M. Gill, " " " $5.
William Nicholson, two vases of Peony Lady Leonora Bramwell, $1.
George Hollis, display of Herbaceous Plants, $2.
J. R. Clarke & Co., Herbaceous Plants, $1.
F. J. Rea, display of German Iris and Herbaceous Plants, $4.
Blue Hill Nurseries, German Iris and Pyrethrums, $4.
William Whitman, display of Pyrethrums, $5.
W. Heustis & Son, *Rosa spinosissima*, $1.
Mrs. E. M. Gill, display of Flowers, $1.

Rose and Strawberry Exhibition.

June 29 and 30.

Special Prizes.

Theodore Lyman Fund.

Hardy Roses.— Twenty-four distinct named varieties, three of each: 3d, William Whitman, $15.

John C. Chaffin Fund.

(For Amateurs Only.)

Best three blooms of any White Hybrid Perpetual Rose:
1st, Robert Seaver, $5.
Best three blooms of any Pink Hybrid Perpetual Rose:
1st, Robert Seaver, $5.
Best three blooms of any Red Hybrid Perpetual Rose:
1st, Robert Seaver, $5.

Society's Prizes.

Hardy Roses.— Twelve named varieties, three of each:
1st, W. J. Clemson, $15.
Six named varieties, three of each:
1st, W. J. Clemson, $8.
Twenty-four named varieties, one of each:
1st, William Whitman, $10; 2d, Aaron Ward, $8.
Twelve named varieties, one of each:
2d, W. A. L. Bazeley, $4.
Six named varieties, one of each:
2d, W. A. L. Bazeley, $3.
Best collection of Hybrid Tea Roses:
1st, Mrs. H. R. Foote, $10.
Best three blooms of a variety introduced since 1903:
1st, W. J. Clemson, Frau Karl Druschki, $3; 2d, Mrs. H. R. Foote, Mons. Louis Ricard, $2.
Six blooms of Frau Karl Druschki:
1st, W. J. Clemson, $3.
Six blooms of any other variety:
2d, W. A. L. Bazeley, $2.
General Display.— One hundred bottles of Hardy Roses, in the Society's racks:
1st, W. J. Clemson, $15; 2d, Mrs. J. L. Gardner, $10; 3d, E. L. Lewis, $8; 4th, J. G. Wright, $6; 5th, Mrs. E. M. Gill, $5.

Collection, named, not less than twelve varieties, filling fifty vases, one rose in each vase:

1st, W. J. Clemson, $12; 2d, Mrs. Frederick Ayer, $8; 3d, E. L. Lewis, $4.

Herbaceous Peonies.— Collection of thirty or more varieties, double, one flower of each:

1st, George Hollis, $12; 2d, Dr. C S. Minot, $8; 3d, T. C. Thurlow & Co., $6.

Collection of twelve named varieties, double, three flowers of each:

1st, James KcKissock, $12; 2d, E. L. Lewis, $8; 3d, William Whitman, $6.

Collection of twelve or more named varieties, Japanese single, including all single varieties destitute of pollen:

1st, George Hollis, $4; 2d, T. C. Thurlow & Co., $3.

Collection of six named double varieties, White, one flower of each:

1st, James McKissock, $3; 2d, T. C. Thurlow & Co., $2.

Rose Pink:

1st, T. C. Thurlow & Co., $3; 2d, J. S. Chase, $2.

Salmon Pink:

1st, T. C. Thurlow & Co., $3.

Red or Crimson:

1st, T. C. Thurlow & Co., $3.

Campanula Medium.— Collection, not less than fifteen bottles:

1st, Mrs. J. L. Gardner, $4.

Delphiniums.— Display, thirty vases, three spikes each:

2d, Mrs. J. L. Gardner, $6.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties, not less than ten genera, grasses admissible:

1st, Blue Hill Nurseries, $8; 2d, Blue Hill Nurseries, $6.

Gratuities:—

W. J. Clemson, display of Roses, $2.
E. L. Lewis, " " " $1.
William Whitman, " " " $1.
George Page, " " " $1.
Mrs. Frederick Ayer, two vases of Roses, $1.
E. J. Shaylor, display of Peonies, $10.
Blue Hill Nurseries, " " " $5.
T. C. Thurlow & Co., " " " $2.
J. S. Chase, " " " $1.
J. E. Rothwell, collection of cut Orchids, $8.
Mrs. R. A. Leeson, collection of Orchids and Bougainvillea, $5.
E. J. Mitton, *Crassula coccinea*, $1.
William Whitman, display of Digitalis, $3.
" " " " Sweet Williams, $2.

Mrs. E. A. Wilkie, Nymphaeas, $1.
W. Heustis & Son, display of Flowering Shrubs, $3.
F. J. Rea, display of Hardy Herbaceous Plants, $5.
Mrs. E. M. Gill, Display of Flowers, $2.

JULY 6.

Gratuities:—

Langwater Gardens, display of Sweet Peas and Gladioli, $3.
George Hollis, display of Peonies, $2.
Mrs. E. M. Gill, display of Flowers, $2.

JULY 20.

SWEET PEAS.— Display of named varieties, filling thirty vases, twenty-five sprays in each, cut with their own foliage:
1st, N. F. Comley, $8; 2d, E. L. Lewis, $6.
Best twelve varieties, named, six sprays of each:
1st, E. L. Lewis, $3; 2d, William Reed, $2; 3d, A. E. Hartshorn, $1.
Fifty sprays, any named White variety:
1st, Thomas Howden, Dorothy Eckford, $3; 2d, N. F. Comley, $2; 3d, A. E. Hartshorn, $1.
Fifty sprays, Light Pink or Blush:
1st, N. F. Comley, Gladys Unwin, $3; 2d, Thomas Howden, Gladys Unwin, $2; 3d, A. E. Hartshorn, Countess Spencer, $1.
Fifty sprays, Rose color:
1st, N. F. Comley, John Ingman, $3; 2d, Thomas Howden, Lord Roseberry, $2; 3d, A. E. Hartshorn, John Ingman, $1.
Fifty sprays, Blue or Purple:
1st, N. F. Comley, King of the Blues, $3; 2d, Wilfrid Wheeler, Navy Blue, $2; 3d, Joseph Thorpe, Navy Blue, $1.
Fifty sprays, Lavender:
1st, Thomas Howden, Mrs. George Higginson, $3; 2d, N. F. Comley, Mrs. George Higginson, $2; 3d, Wilfrid Wheeler, Countess of Radnor, $1.
Fifty sprays, Red or Crimson:
1st, Thomas Howden, King Edward VII, $3; 2d, Mrs. F. S. DeLue, King Edward VII, $2; 3d, O. B. Kenrick, King Edward VII, $1.
Fifty sprays, Orange or Salmon:
1st, Thomas Howden, Helen Lewis, $3; 2d, Wilfrid Wheeler, Miss Willmott, $2; 3d, Mrs. F. S. DeLue, Helen Lewis, $1.
Fifty sprays, any other color:
1st, Thomas Howden, Shazada, $3; 2d, O. B. Kenrick, Blanche Ferry, $2; 3d, E. L. Lewis, Florence Molyneux, $1.
IRIS KAEMPFERI.— Collection of varieties filling twenty-five vases:
3d, T. C. Thurlow & Co., $3.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties, not less than ten genera:
1st, Blue Hill Nurseries, $8; 2d, Blue Hill Nurseries, $6.

Gratuities:—

Bay State Nurseries, Herbaceous Plants, $10.
F. J. Rea, " " $3.
Mrs. J. B. Lawrence, Rambler Roses and Herbaceous Plants, $2.
Harvard Botanic Garden, Aquatics, $10.
E. L. Lewis, Hollyhocks, $1.
Mrs. E. M. Gill, display of Flowers, $1.

August 3.

Perennial Phloxes.— Twelve named varieties, one truss of each:
1st, T. C. Thurlow & Co., $8; 2d, C. S. Pratt, $6; 3d, Blue Hill Nurseries, $4.
Annuals.— General display, named, not less than twenty-five varieties, filling not less than one hundred bottles:
1st, Mrs. E. M. Gill, $10.

Gratuities:—

Blue Hill Nurseries, display of Herbaceous Plants and Phlox, $10.
T. C. Thurlow & Co., display of Phlox, $5.
W. W. Rawson & Co., display of Sweet Peas, Annuals, and Dahlias, $5.

August 17.

Perennial Phloxes.— General display, not less than thirty vases, named:
1st, T. C. Thurlow & Co., $6; 2d, F. W. Spinney, $5; 3d, C. S. Pratt, $3; 4th, James McKissock, $2.
Gladioli.— Twelve named varieties, one spike of each:
1st, William Whitman, $5.
China Asters.— Display of Large Flowered of all classes, named, not less than fifty vases, three flowers in each:
1st, William Whitman, $6.

Gratuities:—

Blue Hill Nurseries, display of Phlox, $5.
William Whitman, display of Phlox and Lilies, $2.
E. L. Lewis, Sweet Peas, $2.
Mrs. J. B. Lawrence, Sweet Peas and Herbaceous Flowers, $3.
W. W. Rawson & Co., display of Dahlias, $5.
William Whitman, display of Delphiniums, $1.
Blue Hill Nurseries, display of Perennials, $5.
Mrs. E. M. Gill, display of Flowers, $1.

Dahlia Exhibition.

September 4 and 5.

Dahlias.— Show, twenty-four blooms, named varieties:
1st, Mrs. H. A. Jahn, $4; 2d, Johnson & Hall, $3; 3d, E. W. Ela, $2.
Show, twelve blooms, named varieties:
1st, W. H: Symonds, $3; 2d, J. H. Flint, $2; 3d, J. H. Flint, $1.
Fancy, twelve blooms, named varieties:
1st, E. W. Ela, $3; 2d, J. H. Flint, $2; 3d, W. D. Hathaway, $1.
Cactus, twenty-four blooms, named varieties:
1st, W. W. Rawson & Co., $4; 2d, E. W. Ela, $3; 3d, N. A. Lindsey, $2.
Cactus, twelve blooms, named varieties:
1st, Johnson & Hall, $3; 2d, Mrs. T. O. Richardson, $2; 3d, W. H. Symonds, $1.
Decorative, twenty-four blooms, named varieties:
1st, Mrs. H. A. Jahn, $4; 2d, W. W. Rawson & Co., $3; 3d, W. D. Hathaway, $2.
Decorative, twelve blooms, named varieties:
1st, E. W. Ela, $3; 2d, W. H. Symonds, $2; 3d, Mrs. L. M. Towle, $1.
Pompon, twenty-four vases of three blooms, each, named varieties:
1st, W. W. Rawson & Co., $4; 2d, J. K. Alexander, $3; 3d, W. D. Hathaway, $2.
Pompon, twelve vases of three blooms each, named varieties:
1st, Mrs. L. M. Towle, $3; 2d, E. W. Ela, $2; 3d, Mrs. H. A. Jahn, $1.
Single, twelve vases of three blooms each, named varieties:
3d, E. W. Ela, $1.
Largest and best collection of named varieties, one vase of each:
1st, W. D. Moon, $8; 2d, Mrs. L. M. Towle, $6.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties, not less than ten genera, grasses admissible:
1st, Blue Hill Nurseries, $10.

Gratuities:—

Sanderson & Lindvoll, display of Dahlias, $4.
W. W. Rawson & Co., " " " $3.
Mrs. J. B. Lawrence, " " " $2.
G. B. Gill, " " " $2.
H. A. Jordan, " " " $2.
Forbes & Gillett, " " " $2.
William Whitman, display of Asters, Zinnias, and Dahlias, $3.
Harvard Botanic Garden, display of Tuberous Begonias, $2.
B. H. Tracy, display of Gladioli, $10.

William Whitman, two vases of *Lilium tigrinum*, $2.
Mrs. J. L. Gardner, display of Foliage Plants, $8.
Mrs. E. M. Gill, display of Flowers, $2.
G. E. Davenport, " " " $1.

Annual Exhibition of Fruits and Vegetables.

October 10 and 11.

Gratuities:—

R. & J. Farquhar & Co., display of Foliage Plants and *Lilium speciosum rubrum*, $10.
W. W. Rawson & Co., display of Dahlias, $3.
G. E. Davenport, display, $1.

Chrysanthemum Show.

November 8, 9, 10.

H. H. Hunnewell Fund.

Hardy Coniferous Trees.— Display in pots and tubs, named:
1st, Joseph Breck & Son Corp., $25.

Society's Prizes.

Best arranged group of foliage and flowering plants covering three hundred square feet:
1st, Edward MacMulkin, $50; 2d, William Whitman, $35; 3d, Sidney Hoffman, $25.

Orchids.— Display arranged for effect with foliage plants, covering a space of not more than fifty square feet:
1st, Edward MacMulkin, $25.

Chrysanthemums.— Twenty-five plants, all colors, commercial specimens:
1st, W. H. Elliott, $40.

Twelve plants, single-flowering sorts, not less than three varieties:
1st, Mrs. Frederick Ayer, $15; 2d, William Whitman, $12; 3d, Mrs. Frederick Ayer, $10.

Six plants of six different varieties, grown to six stems with one bloom to each stem, in seven-inch pots:
1st, Mrs. Lester Leland, $10; 2d, Mrs. Lester Leland, $8; 3d, William Whitman, $6.

Special Prizes.

Josiah Bradlee Fund.

Twenty-five blooms, of twenty-five distinct varieties, named:
1st, P. B. Robb, $25; 2d, E. D. Jordan, $15; 3d, Edwin Jenkins, $10.
Six vases, of six named varieties, ten blooms each:
1st, William Whitman, $30.

Henry A. Gane Memorial Fund.

For the best vase of blooms of the Mrs. Jerome Jones or the Yellow Mrs. Jerome Jones:
1st, James Nicol, $20.

Society's Prizes.

Twelve blooms, Japanese:
1st, E. D. Jordan, $8; 2d, P. B. Robb, $6.
Twelve blooms, Japanese Incurved:
1st, E. D. Jordan, $8.
Twelve blooms, Reflexed:
1st, Mrs. Lester Leland, $8.
Twelve blooms, Anemone:
1st, Mrs. Lester Leland, $6.
Twelve sprays, Pompons, distinct:
1st, R. Vincent Jr. & Sons Co., $5; 2d, P. B. Robb, $3; 3d, Mrs. Lester Leland, $2.
Six best varieties, named, introductions of the current year:
1st, William Whitman, $6; 2d, William Whitman, $4.
Vase of ten blooms on long stems, Pink:
1st, W. A. Riggs, Dr. Enguehard, $10; 2d, William Whitman, Dr. Enguehard, $8; 3d, William Whitman, Miss M. Hankey, $6.
Red:
1st, William Whitman, John Shrimpton, $10; 2d, James Nicol, John Shrimpton, $8; 3d, W. A. Riggs, Miss H. Partridge, $6.
White:
1st, W. A. Riggs, Merza, $10; 2d, James Nicol, Merza, $8; 3d, William Whitman, Fidelity, $6.
Yellow:
1st, W. A. Riggs, Mrs. William Duckham, $10; 2d, W. A. Riggs, Col. D. Appleton, $8; 3d, A. F. Whitin, Col. D. Appleton, $6.
Any other color:
1st, A. F. Whitin, William R. Church, $10; 2d, Edwin Jenkins, Glenorin, $8; 3d, James Nicol, Dakoma, $6.

ORCHIDS.— Display of not less than six genera and fifteen named species and varieties, filling not less than twenty bottles:
1st, J. E. Rothwell, the Appleton Silver Gilt Medal; 2d, Col. Charles Pfaff, the Appleton Silver Medal.

Additional Special Prizes.

For the best arranged table of cut Chrysanthemum blooms, all classes admissible (For commercial growers only):
1st, Sidney Hoffman, $40; 2d, Mrs. E. M. Gill, $30; 3d, Edward MacMulkin, $20.

For the best decorative arrangement of cut Chrysanthemums, with autumn foliage or other suitable material, filling a table eight feet by six feet (For retail store florists only):
1st, Sidney Hoffman, $40; 2d, Edward MacMulkin, $30.

For the best vase of one hundred Chrysanthemum blooms, of one or more varieties, in the Society's large China vases, tasteful arrangement to be considered (Offered by George R. White):
1st, W. W. Edgar Co., Major Bonnafon, $40; 2d, W. W. Edgar Co., William Duckham, $30; 3d, Edward MacMulkin, Major Bonnafon, $20.

For the best vase of fifty Roses of any one variety (1st prize offered by Francis Skinner):
1st, Waban Rose Conservatories, American Beauty, $50; 2d, Carl Jurgens, American Beauty, $30; 3d, W. H. Elliott, Kaiserin Augusta Victoria, $20.

For the best vase of Carnations, distinct varieties, fifty blooms each:
1st, Peter Fisher, $40; 2d, S. J. Goddard, $30; 3d, Backer & Co., $20; 4th, F. R. Pierson Co., $10.

For the best made up centre piece of growing plants, suitable for a table of eight covers (Offered by the Gardeners' and Florists' Club of Boston):
1st, Sidney Hoffman, $12; 2d, F. Heeremans, $8; 3d, Edward MacMulkin, $5.

Gratuities:—

C. H. Totty, collection of Single-flowered Chrysanthemums, $8.
Mrs. H. O. Underwood, six Standard Chrysanthemums, $6.
Mrs. J. M. Sears, collection of forty varieties of Single and Anemone-flowered Chrysanthemums, $5.
G. H. Hale, Single-flowered Chrysanthemums, $5.
R. Vincent Jr. & Sons Co., display of Pompon Chrysanthemums, $5.
William Whitman, display of Specimen Chrysanthemums, $2.
Mrs. E. M. Gill, Chrysanthemums, $3.
William Whitman, Chrysanthemums, $1.
R. & J. Farquhar & Co., display of Foliage and Flowering Plants, $25.

Edward MacMulkin, Palms and Foliage Plants, $10.
Julius Roehrs Co., display of Foliage Plants and Orchids, $10.
Sidney Hoffman, display of Begonia Gloire de Lorraine, $6.
A. M. Davenport, display of Begonia Gloire de Lorraine, $5.
Robert Rust, plant of Begonia Turnford Hall, $1.
Lager & Hurrell, Orchids, $5.
M. A. Patten, display of Carnations, $6.
C. S. Strout, Carnations and Chrysanthemums, $5.
Miss Marion Pierce, display of Carnations, $3.
A. Roper, three vases of Carnations, $3.
H. A. Jahn, four vases of Carnations, $3.
Robert Rust, vase of Carnation Enchantress, $1.
Philip Dexter, " " " " $1.
S. J. Goddard, display of Flowers, $1.

Society's Silver Medals.

March 22. R. & J. Farquhar & Co., Superior group of Spring Bulbs and Plants.
" " George M. Anderson, Display of Cyclamen.
" " William Sim, Superior cultivation of Winter-flowering Sweet Peas.
" " T. D. Hatfield, Superior cultivation of Acacias.
April 20. William C. Rust, Superior cultivation of Himalayan Rhododendron Lady Mary Fitzwilliam.
May 4. J. T. Butterworth, Superior cultivation of *Cattleya Mossiae.*
May 25. George Stewart, Hybrid *Calceolaria Stewartii.*
June 8. R. & J. Farquhar & Co., *Spiraea Japonica* Queen Alexandra.
" " Prof. C. S. Sargent, Display of Seedling Tree Peonies.
November 2. Robert Scott & Son, New Rose Mrs. Jardine.

First Class Certificates of Merit.

February 2. Martin Sullivan, Specimen plant of *Cattleya Trianae.*
March 22. George Page, Superior cultivation of Marguerite Queen Alexandra.
" " M. H. Walsh, Seedling Rambler Rose Milky Way.
" " Thomas Roland, Superior cultivation of Genistas.
" " Lager & Hurrell, *Calanthe vestita igneo oculata gigantea.*
" " Peter Fisher, Seedling Carnation Beacon.
" " Albert Roper, Seedling Carnation Bay State.
" " William Sim, New Single Violet Boston.
" " James Crosbie, Superior cultivation of *Dendrobium nobile.*
" " J. E. Rothwell, *Dendrobium nobile virginale.*
" " Gen. S. M. Weld, *Primula Kewensis.*
" " Thomas Watt, Superior cultivation of *Azalea Indica.*

March 22. Kenneth Finlayson, Seedling Himalayan Rhododendron Mary Weld.
" " Martin Sullivan, Superior cultivation of Spring Bulbous Plants.
May 4. George Page, Superior cultivation of Marechal Niel Rose.
May 18. R. & J. Farquhar & Co., Display of eighty-one named varieties of Tulips, single and double.
May 25. Langwater Gardens, Display of Darwin Tulips.
June 8. James Crosbie, Superior cultivation of *Clerodendron Balfouri.*
June 29. James Cartwright, Superior cultivation of *Oncidium sphacelatum.*
" " J. E. Rothwell, American Seedling Cypripedium Emil Johanssohn (*C. Euryale* × *C. Philippinense*).
" " James McKissock, New Peony Rosa Bonheur.
July 6. James Crosbie, Superior cultivation of *Crassula coccinea.*
" " Langwater Gardens, *Gladiolus nanus* Peach Blossom.
" " " " " " Mathilde.
" " J. T. Butterworth, Superior cultivation of *Odontoglossum citrosmum.*
July 20. H. H. Rogers, Display of Stocks.
" " James McKissock, New Delphiniums from Lemoine: Arago, Frédéric Mistral, Laplace, Albert Metin, Maxime Gorki, Dupleix, Statuaire Rude, Romeo, Comte Horace de Choiseul.
" " W. W. Rawson & Co., *Delphinium Zalil.*
September 4. Frederick J. Rea, *Helenium autumnale superbum rubrum.*
" " B. Hammond Tracy, Seedling Gladiolus Kathryn.
" " " " " New Gladiolus Princess Sandersoni.
" " " " " " " Jean Dieulafoy.
" " A. H. Wingett, Seedling Dahlia Charles Lanier.
" " Sidney Hoffman, Artistic Arrangement of Dahlias.
" " J. L. Smith, Superior cultivation of *Nephrolepis Barrowsi.*
November 8. R. Vincent Jr. & Sons Co., Display of Pompon Chrysanthemums.
" " W. A. Manda Inc., *Dracaena Mandaiana.*
" " William C. Rust, Superior cultivation of *Odontoglossum grande.*
" " F. R. Pierson Co., New Fern, *Nephrolepis superbissima.*
November 23. Wheeler & Co., *Cattleya labiata polychilus.*

Honorable Mention.

January 26. Quidnick Greenhouses, Seedling Carnation Victoria.
March 22. Joseph Breck & Son, Display of Oak Jardinières and collection of Bulbs.
" " W. W. Rawson & Co., Beds of Spring Bulbs and Plants.
" " H. A. Jahn, Display of Seedling Carnations.
" " Mrs. E. S. Grew, Vase of Farquhar's Annual Pink Lupin.

March 22. William Whitman, Plant of *Cattleya Schroederae.*
" " R. & J. Farquhar & Co., Begonia Gloire de Lorraine *superba,*
" " Julius Roehrs Co., New Azalea Julius Roehrs.
March 30. R. & J. Farquhar & Co., Pelargonium Mme. Thibaut.
May 4. Harvard Botanic Garden, New Primula *P. Poissoni.*
" " Mrs. Frederick Ayer, *Acacia pulchella.*
" " William Whitman, Superior cultivation of *Cattleya Skinneri.*
May 25. Harvard Botanic Garden, *Cereus speciosus.*
June 8. Prof. C. S. Sargent, Vase of *Syringa pubescens.*
" " Dr. C. G. Weld, Vase of Lily of the Valley, outdoor grown.
June 15. James McKissock, Display of Tree Peonies.
" " Mrs. David S. Greenough, White Tree Peonies.
" " Boston Park Department, Vase of *Malus Ioensis flore pleno.*
" " Harvard Botanic Garden, *Cereus Eyresii.*
" " Blue Hill Nurseries, *Thalictrum Delavayi.*
" " " " " *Arenaria montana.*
" " " " " *Incarvillea grandiflora.*
June 22. R. & J. Farquhar & Co., Display of Herbaceous Plants.
June 29. J. Lawson, Culture of *Crassula coccinea.*
" " William Whitman, Display of Digitalis.
" " George Hollis, Seedling Peony George Hollis.
" " Dr. C. S. Minot, New Peony M. Charles Leveque.
" " Frederick J. Rea, *Iris orientalis* Snow Queen.
" " E. J. Shaylor, Seedling Peony No. 2.
July 6. Langwater Gardens, New Sweet Pea Queen Alexandra.
" " " " " " " Nora Unwin.
" " George Hollis, Seedling Peony Lucy E. Hollis.
" " " " " " Mary L. Hollis.
" " Lowthorpe School of Horticulture, Sweet William Sutton's Pink Beauty.
July 13. C. W. Parker, Display of Hardy Roses.
July 20. George E. Davenport, Variegated Nasturtiums.
August 3. W. W. Rawson & Co., *Nicotiana affinis hybrida.*
August 17. Charles W. Parker, Display of Roses.
September 4. Henry A. Dreer, *Nephrolepis todeaoides.*
" " " " " *Nephrolepis Amerpohli.*
" " R. & J. Farquhar & Co., Display of *Lilium tigrinum, L. auratum, L. speciosum, and L. Philippinense.*
" " Laban Pratt, Display of Single Dahlias.
" " B. Hammond Tracy, Seedling Gladiolus Harvard.
" " W. W. Rawson & Co., Display of Dahlias.
October 10. W. C. Strong, Sports from Seedlings of Wier's Cut-leaf Maple.
October 26. Walter H. Murdock, Chrysanthemum Mrs. A. T. Miller.
November 8. S. J. Goddard, New Seedling Carnation Priscilla.
" " Mrs. J. M. Sears, Collection of forty varieties of Single and Anemone-flowered Chrysanthemums.

November 8. Philip Dexter, Seedling Anemone-flowered Chrysanthemums.
" " George H. Hale, Single-flowered Chrysanthemums.
" " Julius Roehrs Co., *Cyclanthus bipartitus*.
" " " " " *Ludovia crenifolia*.
" " Albert Roper, Seedling Carnation No. 1000.
" " M. A. Patten, " " No. 50–24.
" " " " " " No. 133.
" " Wa-No-Ka Greenhouses, New Carnation Apple Blossom.
December 28. T. T. Watt, Superior cultivation of *Lopezia macrophylla*.

Votes of Thanks.

March 22. R. & J. Farquhar & Co., Superior group of Spring Bulbs and Plants.
" " Prof. C. S. Sargent, Agave in bloom.
" " F. Heeremans, Vase of Gardenias.
" " Dr. C. G. Weld, Rhododendron Mary Weld.
" " Walter Hunnewell, Display of Acacias.
March 30. R. & J. Farquhar & Co., Pelargonium Mme. Thibaut.
June 8. R. & J. Farquhar & Co., Bougainvillea and Rhododendrons.
June 15. Charles W. Parker, *Iris pallida Dalmatica*.
June 22. Charles W. Parker, *Iris pallida Dalmatica*.
June 29. Walter Hunnewell, Display of Hardy Rhododendrons and Kalmias.
" " R. & J. Farquhar & Co., Display of Herbaceous and Ornamental Plants.
" " W. A. L. Bazeley, Display of Sweet Williams.
July 20. R. & J. Farquhar & Co., Display of Stocks, Herbaceous Plants, Iris, and Sweet Peas.
" " Charles W. Parker, Roses.
August 3. W. W. Rawson & Co., Display of Sweet Peas, Annuals and Dahlias.
August 17. Rev. T. L. Dean, Display of Rudbeckias.
September 4. Rev. T. L. Dean, Display of Helianthus.
" " Prof. C. S. Sargent, Two vases of Gladioli, Georges Frick and Baron J. Hulot.
December 28. G. C. Horne, *Sparmannia Africana*.

Arthur H. Fewkes
Robert Cameron
William N. Craig
T. D. Hatfield
William Nicholson

Committee on Plants and Flowers.

REPORT OF THE COMMITTEE ON FRUITS FOR THE YEAR 1907.

BY WILFRID WHEELER, CHAIRMAN.

An estimate of the fruit grown in a state cannot be taken by the results of one year's experience but by an average of several years, when it will be found that, despite climatic conditions and insect pests, the crop produced is more or less uniform. This is an encouraging thought now for we have gone through a very trying year in Massachusetts as well as the whole of New England and it is remarkable that we have come out as well as we have. The past winter was an unusually cold one, next to the coldest in the history of the weather bureau, with an average temperature of 24.4, or 2½ degrees below normal,[1] and was followed by a wet and very late spring, with many frosts during May, a season that seemed very favorable to the ravages of the codling moth.

Added to all this was a long dry summer when for eight weeks less than one inch of rain fell. Yet in Massachusetts, although the fruit crop in general was a disappointment, there probably was never a better apple crop; not in quantity so much as in quality. This result has come indirectly through the gypsy and brown-tail moth, for now that people have become thoroughly aroused to the danger from these pests more apple, pear, and other trees have been sprayed, thus doing away with, not only the insects feared, but also many others which have been so detrimental to the fruit crop.

It has certainly been thoroughly proved this year that spraying helps in a marked degree to produce good sound well-developed fruit, and in the course of time we shall reap a real benefit from the numerous insects, scales, and fungi; for those orchards which are not cared for will be entirely destroyed, thus doing away with a large quantity of poor fruit; while the orchards which are watched

[1]February, 8 degrees below normal.

and scientifically treated will grow far better fruit than was ever believed possible in the state; so, perhaps, these things, so hard to bear for the present, will in the end work for our benefit, and mean an advancement in horticulture as well as in other ways.

Probably the least affected of the fruits by the severe winter was the strawberry, for the deep snow completely protected the plants from harm and in most of the state, at least, the blossoms escaped the frosts in May, and the drought came too late to injure the fruit. All this combined to make an unusually large crop which ripening about ten days later than in the average year tended to make it unprofitable. The fruit all came in within a few days in eastern Massachusetts and the Boston markets were flooded with berries many of which sold as low as four cents a quart. In spite of the conditions about Boston, however, some of our smaller cities and large towns had hard work to get good berries, which goes to prove that there are not enough strawberries grown in rural districts for the local markets, or else that too many are shipped to one point.

The apple crop was a great surprise to growers in Massachusetts, for early predictions placed it at about one-quarter the usual size. Some districts which were not counted upon at all produced abundantly and brought the crop above normal. Although early apples were undersized the rains of September kept the late apples growing so that they were harvested in the best condition.

There were not as many pears as usual this year but this is not to be wondered at for pears are not grown as much now in this state as formerly, and the acreage under cultivation is on the decline rather than the increase. Many of the older trees are being cut down and no new ones planted. This is especially so in the immediate vicinity of Boston where buildings are replacing the once famous pear orchards.

In the season just past peaches were almost a total failure, the buds being unable to stand the severe winter. This condition seemed about the same all over the Eastern States and made the few peaches which were shipped from the West and South bring good prices, though the quality could not compare with our own home-grown fruit. One such failure of this crop should not discourage growers for we know what can be done with this fruit

in Massachusetts and when a more hardy peach of good quality is produced this will become one of the leading peach-growing states.

Plums were also more or less affected by the winter, but in many cases where two-thirds of the buds were destroyed those left produced very fine fruit. While plums are not a great commercial crop they are grown quite extensively in the gardens of our state and form an important adjunct to the fruit used for home consumption. This is especially true of the Japanese varieties which are more hardy and less liable to disease than our native and European kinds.

There is probably less known and less done about growing grapes in Massachusetts than any other fruit; hardly a vineyard of over two acres is cultivated in the state, and the few vines which are found in the home gardens are as a rule more or less neglected so that we do not see many good grapes here. This year the crop was very badly injured by the rose bugs. These insects attack the vines as they are blooming, eating out many of the small florets and leaving the bunches to develop in a very straggly and ill-shaped manner. It seems as if we should grow more grapes in Massachusetts, not entirely for the market, but in our gardens; this fruit will thrive in any good soil and does better in poor soil than any other fruit native to our climate. It can be grown in a very small space and is also one of the most delicious and healthful of fruits. We need earlier good-flavored varieties as our climate is too uncertain to develop many of the finer late kinds unless the vines are girdled. The large Italian population in our state is at present creating a demand for grapes for wine making and this would seem to promise a very profitable industry as grapes can be grown much cheaper for this purpose than for table use. The crop was good where the rose bugs did not destroy it and the quality of some varieties was never better. This was partly owing to the fine weather which gave the grapes ample time to ripen.

The small fruits other than the strawberry do not seem to play a very important part in the fruit market or even in the gardens of the state; most of our markets are supplied from other states with raspberries, blackberries, currants, and gooseberries, and we have not yet learned that these fruits can be made a source o profit at well as of pleasure.

The exhibitions of the year were with two exceptions well supplied with fruit; one of these, the strawberry exhibition, came too early even after it had been postponed a week, and some of the late varieties were not ripe enough to show. Abington, a rather recent introduction, was without doubt the most attractive strawberry on the tables and took a great many prizes. This berry is as large as Bubach, much the same shape, and a bright glossy red, of good quality, and firm and attractive in appearance. The plant is vigorous and healthy, growing well in all kinds of soil, but seems to do better on a rather light loam. Its season is early and taken all round this variety fills a long-felt want. Other new varieties exhibited were McKinley, by I. E. Coburn, and Barrymore, by H. L. Crane, this latter being one of his seedlings exhibited last year. The other exhibition, August 3, owing to the dry weather was almost a failure for the fruit shown was of the poorest quality.

All classes at the Annual Exhibition were well competed for and the collections of apples brought out some very fine fruit. One noticeable feature of this exhibition was the remarkably fine color on the apples shown which was partly due to the fruit hanging longer on the trees, owing to the mild fall weather; and then again the dry summer produced cleaner apples as there were no black fungus spots which are more common in a wet season. Pears were numerous and these, too, were very clean and of good size. Grapes while not as abundant as usual were good and particularly so was a collection of fifty varieties from The T. S. Hubbard Co. of Fredonia, N. Y. This contained many varieties which are not grown in this section and was of great interest to the grape growers of Massachusetts. In the collection was the true McPike grape, exhibited for the first time before this society. This grape has a very large berry, is of delicious flavor, and attractive appearance, although the bunch is small. A great many worthless varieties have been sold for McPike, but it has been learned from good authority that very few of the true vines were ever disseminated.

The Bay State apple was shown for the first time at our exhibitions by A. B. Howard of Belchertown (its originator). It appeared to advantage and seems to have a future. This apple comes later than the Gravenstein and fills a season not covered by any other good quality apple. In appearance it is like the Graven-

stein but smaller and with larger stripes; the flesh is more crisp and the texture is good.

Among some of the interesting and fine exhibits were very large and fine Concord and Niagara grapes from C. F. Hayward of Ashby; Seckel pears from G. V. Fletcher of Belmont; Isabella and Salem grapes, and Maiden Blush apples and Worden Seckel pears from W. G. Kendall, Atlantic. A very fine display of apples was that shown by L. F. Priest of Gleasondale; about fifteen varieties were entered in many classes and the standard of the fruit was very high, showing that with care and attention the apple can be brought to perfection in Massachusetts. E. E. Cole also exhibited very fine apples in many classes. J. H. Chase of Dorchester showed some fine Wolf River apples which while attractive in appearance are worthless for either cooking or eating. J. Corey & Son of Truro, Mass., showed very fine King and Roxbury Russet; and as these were grown almost on the end of Cape Cod where it was supposed that apples could not be grown to perfection a great deal of interest was attracted by this fruit. On the whole this exhibition was a great success and made a good ending to a somewhat discouraging season.

At the chrysanthemum show the decorated fruit tables were a very attractive and successful feature of the exhibition. Five entries were made and brought out four different ideas in the decoration of a fruit table, namely: the professional florist, the retail fruit dealer, the private gardener, and the amateur fruit grower.

Among some of the newer fruits which should be more extensively grown here are the Abington strawberry, the Herbert raspberry, Perfection currant, Rolfe, Bay State, and Twenty Ounce apples (this latter while not new is not much grown here and is a very excellent variety), Worden Seckel and Lincoln pears, and the McPike grape.

It seems as if with a more thorough understanding of fruit culture the growers of our state could increase their incomes by means of better quality in their fruit. We hear that new orchards are not being planted because it takes so long to get a return from the land; but if fruit growers would but study conditions, soils, etc. they will find that many other quick return crops can be grown among

young trees thus insuring some remuneration from the land until the trees come into bearing. We need more capital to invest in fruit lands, but we cannot get the capital until results can be shown that will induce capitalists to invest in such ventures, and along with the money we need more trained men to take up this work and give to it the painstaking care that is given to other lines of business.

The possibilities for fruit growing in Massachusetts have not been realized as yet and will not be until we have a more scientific knowledge of our soils, climate, market, and other conditions which bear upon this industry. Undoubtedly our Society should do more toward stimulating a desire to produce more fruit in the home garden; and especially in the suburbs of our cities where so many of the small back yards which are capable of producing good fruit are now allowed to lie idle and neglected. The fruit committee would suggest that the Society extend aid to any who would care to develop their limited resources, and as a suggestion a letter or prospectus might be made up and mailed to any who may be interested in such an opportunity.

In looking back over the history of our society it is noticed with regret that interest in fruit culture has been gradually falling off. As far back as 1852 our exhibitions were filled each year with many new varieties of fruit and particularly the grape which was at that time of great interest to growers and hybridizers. Then, too, the pear was a fruit much thought of and we hear of one of our former presidents exhibiting over 300 varieties from his own garden. More of the small fruits, with the exception of the strawberry, were grown at that time, and the cherry flourished everywhere near Boston. Indeed, the suburbs of Boston seemed like one large fruit garden and keen competition marked the exhibitions of the society. In some ways the loss of this fruit gardening can be explained for now it is possible to get a greater variety of fruit and at all seasons shipped from distant points, while then in order to get fruit at all one had to grow it himself. However, it does not seem right that we should lose an industry or an avocation which promises so much health and enjoyment to the grower.

Market prices have ruled this year as follows (wholesale):

Strawberries, early	from	.15	to	.50	cts. per quart	
" late	"	.04	"	.15	"	"
Currants	"	.10	"	.15	"	"
Gooseberries	"	.08	"	.12	"	"
Raspberries	"	.15	"	.25	"	"
Blackberries	"	.10	"	.15	"	"
Plums	"	$2.00	"	$4.00	a bushel	
Peaches	"	$3.00	"	$5.00	"	"
Pears, Bartlett	"	$1.50	"	$3.00	"	"
" Bosc	"	$2.00	"	$4.00	"	"
Grapes	"	.03	"	.08	cts. a lb.	
Apples, early	"	$2.00	"	$4.00	a bushel	
" late	"	$2.00	"	$4.00	per bbl.	

There were 124 classes open for competition in fruits for the year 1907 and of these 102 were competed for. There were appropriated for prizes on fruits for 1907 $1039.00 and $100.00 additional for special prizes at the Chrysanthemum Show; of this $717.00 was awarded on the regular schedule and $100.00 on the special prizes, making a total of $1139 appropriated and $817 awarded; and leaving a balance of $322.00.

This balance is a good deal larger than it would have been had we had a normal year. Two votes of thanks, three gratuities, and one silver-gilt medal were awarded by the committee.

The chairman of the Committee on Fruits has during the past year visited the horticultural societies of Vermont, New Hampshire, Connecticut, and Maine, at their annual meetings and exhibitions; to Maine as a delegate from this society. In all these states he has found a very progressive spirit in evidence with regard to the future of New England fruit growing. The prevailing opinion at all these meetings seemed to be that the apple was the most profitable fruit for New England when the best modern methods were applied to its cultivation and marketing. The question of a national fruit marks act was discussed at Maine and Vermont; both sides of the question were presented and it seemed to those who discussed it that if we are to stand with the rest of the country in the foreign markets we shall have to have some legal standard to grade our fruit by. The fruit shown at these various exhibitions was as a rule

very good and compared favorably with our own products. One very noticeable fact observed in connection with these meetings is that all the fruit growers are thoroughly aroused in regard to the San José scale and other insect pests, and for this reason alone, if for no other, these various meetings are sources of help and the best means of spreading useful information among the fruit growers of a locality.

The educational value of these horticultural meetings means much to the several states, for as a rule they are held in different parts of the state and bring together persons representing the various interest of the different sections, besides introducing new speakers from other states.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1907.

Spring Exhibition.

March 22, 23, 24.

Winter Apples.— For the best collection, not less than four varieties: 1st, G. V. Fletcher, $5; 2d, A. E. Hartshorn, $4.

Rose and Strawberry Exhibition.

June 29 and 30.

Theodore Lyman Fund.

Strawberries.— Four quarts of any variety:
1st, G. V. Fletcher, Marshall, $10; 2d, G. F. Wheeler, Abington, $8; 3d, I. E. Coburn, McKinley, $6; 4th, S. H. Warren, Abington, $5; 5th, John Ward, Sample, $4.

Benjamin H. Pierce Fund.

Strawberries.— One quart of any variety introduced since 1903:
1st, S. H. Warren, Abington, $6; 2d, G. F. Wheeler, Abington, $4.

Society's Prizes.

STRAWBERRIES.— For the largest and best collection, not less than ten baskets of two quarts each, and not less than five varieties:
1st, G. F. Wheeler, $15; 3d, G. V. Fletcher, $8.
Five baskets of one variety, one quart each:
1st, G. F. Wheeler, Abington, $5; 2d, I. E. Coburn, Marshall, $4; 3d, G. V. Fletcher, Marshall, $3.
For the largest and best collection, not less than six varieties, twelve specimens of each variety, shown on plates:
2d, I. E. Coburn, $3.
For the heaviest single specimen of any variety:
2d, G. V. Fletcher, $1.
Two quarts of Brandywine:
1st, I. E. Coburn, $3.
Two quarts of Haverland:
1st, I. E. Coburn, $3; 2d, Wilfrid Wheeler, $2.
Two quarts of Marshall:
1st, H. A. Clark, $3; 2d, G. V. Fletcher, $2; 3d, I. E. Coburn, $1.
Two quarts of Minute Man:
1st, Wilfrid Wheeler, $3; 2d, G. F. Wheeler, $2; 3d, John Ward, $1.
Two quarts of Sample:
1st, G. F. Wheeler, $3; 2d, I. E. Coburn, $2; 3d, John Ward, $1.
Two quarts of any other variety:
1st, S. H. Warren, Abington, $4; 2d, G. F. Wheeler, Abington, $3; 3d, H. L. Crane, Barrymore, $2; 4th, G. F. Wheeler, Cardinal, $1.
CHERRIES.— Two quarts of any Red variety:
1st, G. V. Fletcher, Guigue Noir, $3.

JULY 20.

CURRANTS.— Two quarts of any Red variety:
1st, W. G. Kendall, Wilder, $3; 2d, Mrs. E. J. Whitney, Perfection, $2; 3d, G. V. Fletcher, Versaillaise, $1.
Two quarts of any White variety:
1st, W. G. Kendall, White Grape, $3; 2d, E. L. Lewis, White Grape, $2; 3d, G. V. Fletcher, White Grape, $1.
GOOSEBERRIES.— Collection of not less than three varieties, one quart each, American and Foreign admissible:
1st, J. S. Chase, $4; 2d, W. J. Clemson, $3.
Two quarts of any variety of American origin:
1st, W. G. Kendall, Chatauqua, $3; 2d, J. S. Chase, Triumph, $2; 3d, J. S. Chase, Columbus, $1.
Two quarts of any variety of Foreign origin:
1st, Wilfrid Wheeler, Industry, $2; 2d, J. S. Chase, Ashland, $1.

Fruit.— Largest and best collection of midsummer fruit arranged for effect with foliage:
1st, Wilfrid Wheeler, $8; 2d, G. V. Fletcher, $6.

Gratuity:—

Mrs. E. M. Gill, Collection of Currants, $1.

August 3.

Apples.— Sweet Bough:
1st, G. V. Fletcher, $3; 2d, W. Heustis & Son, $2.
Any other variety:
3d, G. L. Brown, Yellow Transparent, $2.
Pears.— Any variety:
3d, G. V. Fletcher, Clapp's Favorite, $2; 4th, J. L. Bird, Giffard, $1.
S. H. Warren, Autumn Strawberries, a Vote of Thanks.

August 17.

Apples.— Red Astrachan:
1st, Michael Calahan, $3; 2d, E. L. Lewis, $2; 3d, Sarah A. Wheeler, $1.
Chenango:
3d, G. L. Brown, $1.
Williams:
1st, G. V. Fletcher, $3; 2d, Wilfrid Wheeler, $2; 3d, H. A. Clark, $1.
Any other variety:
1st, G. V. Fletcher, Sweet Bough, $4; 2d, L. F. Priest, Yellow Transparent, $3; 3d, H. A. Clark, Oldenburg, $2; 4th, D. L. Fiske, Oldenburg, $1.
Pears.— Clapp's Favorite:
1st, H. A. Clark, $3; 2d, G. V. Fletcher, $2; 3d, W. Heustis & Son, $1.
Any other variety:
3d, J. L. Bird, Giffard, $2; 4th, J. L. Bird, Tyson, $1.
Peaches.— Single plate of any variety:
1st, G. V. Fletcher, Greensboro, $4; 2d, D. L. Fiske, Greensboro, $3; 3d, D. L. Fiske, Sneed, $2.
Plums.— Japanese, Abundance:
1st, D. L. Fiske, $2.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3; 2d, D. L. Fiske, Red June, $2.
Blackberries.— Two quarts of any variety:
1st, Mrs. E. M. Gill, Dorchester, $3.

Dahlia Exhibition.

September 4 and 5.

Special Prizes.

Foreign Grapes.— Collection of not less than four varieties, two bunches each:
1st, Mrs. J. C. Whitin, $25.

Benjamin V. French Fund.

Apples.— Gravenstein:
1st, L. F. Priest, $3; 2d, Mrs. A. F. Estabrook, $2; 3d, H. A. Clark, $1.

Marshall P. Wilder Fund.

Pears.— Bartlett:
1st, H. A. Clark, $3; 2d, F. W. Dahl, $2; 3d, G. V. Fletcher, $1.

Society's Prizes.

Apples.— McIntosh:
1st, Wilfrid Wheeler, $3; 2d, L. F. Priest, $2.
Porter:
1st, Wilfrid Wheeler, $3; 2d, W. Heustis & Son, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, H. A. Clark, Williams, $4; 2d, L. F. Priest, Wealthy, $3; 3d, L. F. Priest, Nyack, $2; 4th, E. E. Cole, Alexander, $1.
Pears.— Any variety ripe, Bartlett excepted:
1st, F. W. Dahl, Clapp's Favorite, $4; 2d, G. V. Fletcher, Clapp's Favorite, $3; 3d, F. W. Dahl, Giffard, $2; 4th, F. W. Dahl, Dearborn's Seedling, $1.
Peaches. Collection of not less than four varieties:
2d, D. L. Fiske, $4.
Carmen:
1st, D. L. Fiske, $2.
Any other variety:
1st, G. V. Fletcher, Greensboro, $4; 2d, D. L. Fiske, Mamie Ross, $3.
Plums.— Collection of not less than four varieties, twelve specimens of each:
1st, W. P. Hutchinson, $5; 2d, G. V. Fletcher, $3.
Single plate of any variety:
1st, O. B. Kenrick, Bradshaw, $3; 2d, G. V. Fletcher, Bradshaw, $2; 3d, E. B. Parker, Bradshaw, $1.

Plums, Japanese.— Burbank:
1st, Wilfrid Wheeler, $2; 2d, D. L. Fiske, $1.
Collection of not less than four varieties, twelve specimens each:
1st, E. B. Parker, $5; 2d, W. P. Hutchinson, $3; 3d, D. L. Fiske, $2.
Single plate of any variety:
1st, W. G. Kendall, Burbank, $3; 2d, O. B. Kenrick, Burbank, $2; 3d, E. B. Parker, Shiro, $1.
Native Grapes.— For the best White Grape:
1st, W. G. Kendall, Green Mountain, $3; 2d, J. S. Chase, Green Mountain, $2.

Gratuities:—

G. V. Fletcher, Greensboro Peaches, $1.
Mrs. J. C. Whitin, Diamond Jubilee Grape, a First Class Certificate of Merit.

Annual Exhibition of Fruits and Vegetables.

October 10 and 11.

Theodore Lyman Fund.

Apples.— For the largest and best collection of Fall Apples, not less than six varieties and twelve specimens each:
1st, E. E. Cole, $12; 2d, L. F. Priest, $10; 3d, F. B. Ripley, $8.

Samuel Appleton Fund.

Apples.— Baldwin:
1st, Alden Derby, $3; 2d, E. B. Parker, $2; 3d, E. E. Cole, $1.
Hubbardston:
1st, L. F. Priest, $3; 2d, G. F. Wheeler, $2; 3d, A. B. Howard & Son, $1.
Pears.— Bosc:
1st, Wilfrid Wheeler, $3; 2d, W. G. Kendall, $2; 3d, J. B. Shurtleff, Jr., $1.
Sheldon:
1st, Elbridge Torrey, $3; 2d, L. F. Priest, $2; 3d, J. M. Swett, $1.

Benjamin V. French Fund.

Apples.— Rhode Island Greening:
1st, Mrs. A. F. Estabrook, $3; 2d, E. E. Cole, $2; 3d, Alden Derby, $1.

Marshall P. Wilder Fund.

PEARS— Anjou:
1st, H. C. Fuller, $3; 2d, C. F. Hayward, $2; 3d, G. V. Fletcher, $1.
GRAPES.— Concord, twelve bunches:
1st, C. F. Hayward, $3; 2d, E. E. Lincoln, $2.
Worden:
1st, J. S. Chase, $3.

Society's Prizes.

APPLES.— Collection of not less than six varieties of Winter Apples, twelve specimens of each:
1st, L. F. Priest, $12; 2d, G. V. Fletcher, $10; 3d, E. E. Cole, $8.
Belleflower:
1st, G. F. Wheeler, $3; 2d, Mrs. A. E. Underwood, $2.
Hunt Russet:
1st, G. F. Wheeler, $2; 2d, W. G. Kendall, $1.
Maiden's Blush:
1st, W. G. Kendall, $3.
McIntosh:
1st, L. F. Priest, $3; 2d, Alden Derby, $2; 2d, H. A. Clark, $1.
Northern Spy:
1st, G. V. Fletcher, $3; 2d, H. A. Clark, $2; 3d, G. F. Wheeler, $1.
Roxbury Russet:
1st, L. F. Priest, $3; 2d, H. L. Fisher, $2; 3d, J. Corey & Son, $1.
Sutton:
1st, H. A. Clark, $3; 2d, G. V. Fletcher, $2.
Tompkins County King:
1st, J. Corey & Son; $3; 2d, A. B. Howard, $2; 3d, John Coolidge, $1.
Wealthy:
1st, Alden Derby, $3; 2d, O. B. Kenrick, $2; 3d, L. F. Priest, $1.
Gravenstein:
1st, H. A. Clark, $3; 2d, L. F. Priest, $2; 3d, I. H. Locke, $1.
Any other variety:
1st, A. B. Howard & Son, Red Canada, $4; 2d, C. H. Marston, N. Y. Pippin, $3; 3d, F. B. Ripley, $2; 4th, L. F. Priest, Rolfe, $1.
CRABAPPLES.— Any variety, twenty-four specimens:
1st, L. F. Priest, Hyslop, $3; 2d, C. M. Handley Estate, Hyslop, $2; 3d, D. L. Fiske, Siberian, $1.
PEARS.— For the largest and best collection, twelve of each variety, not less than six varieties:
1st, F. W. Dahl, $10; 2d, J. L. Bird, $8; 3d, H. A. Clark, $6.
Angouleme:
1st, F. W. Dahl, $3; 2d, Elbridge Torrey, $2; 3d, J. L. Bird, $1.
Clairgeau:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, F. W. Dahl, $1.

Comice:
1st, J. L. Bird, $3; 2d, G. V. Fletcher, $2; 3d, M. W. Chadbourne, $1.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, I. H. Locke, $2; 3d, J. L. Bird, $1.
Fulton:
1st, C. F. Curtis, $2.
Josephine of Malines:
1st, J. B. Shurtleff, Jr., $2; 2d, J. L. Bird, $1.
Lawrence:
1st, F. W. Dahl, $3; 2d, J. L. Bird, $2; 3d, John Coolidge, $1.
Louise Bonne of Jersey:
1st, F. W. Damon, $2; 2d, F. W. Dahl, $1.
Marie Louise:
1st, Elbridge Torrey, $2; 2d, John Coolidge, $1.
Onondaga:
1st, John Coolidge, $2; 2d, J. L. Bird, $1.
Urbaniste:
1st, W. G. Kendall, $2; 2d, J. L. Bird, $1.
Seckel:
1st, G. V. Fletcher, $3; 2d, W. G. Kendall, $2; 3d, Mrs. C. E. Fuller, $1.
Superfin:
1st, E. B. Wilder, $2; 2d, J. L. Bird, $1.
Any other variety:
1st, W. G. Kendall, Worden's Seckel, $4; 2d, G. H. Cuthbertson, Vicar, $3; 3d, C. F. Curtis, Hardy, $2; 4th, F. W. Dahl, Sieulle, $1.

Quinces.— Champion:
1st, L. F. Priest, $3; 2d, E. M. Bruce, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, I. P. Gragg, Meech's Prolific, $4; 2d, G. V. Fletcher, Orange, $3; 3d, J. S. Chase, Meech's Prolific ,$2; 4th, Manuel De Sousa, President, $1.

Peaches.— Any variety:
1st, John Coolidge, Crosby, $3; 2d, G. L. Brown, Highland, $2; 3d, D. L. Fiske, Stump the World, $1.

Plums.— Any variety:
1st, E. B. Parker, October Purple, $3; 2d, W. P. Hutchinson, Monarch, $2; 3d, W. P. Hutchinson, Chabot, $1.

Native Grapes.— For the largest and best collection, not less than five varieties of three bunches each:
1st, C. W. Libby, $10; 2d, J. S. Chase, $8.
Six bunches of Brighton:
1st, J. S. Chase, $3; 2d, C. W. Libby, $2; 3d, F. H. Jackman, $1.
Delaware:
1st, W. G. Kendall, $3; 2d, J. S. Chase, $2; 3d, C. W. Libby, $1.
Lindley:
1st, C. W. Libby, $3; 3d, J. S. Chase, $1.

Niagara:
1st, C. F. Hayward, $3; 2d, Charles Sander, $2; 3d, J. B. Shurtleff, Jr., $1.
Pocklington:
1st, F. H. Jackman, $3; 2d, E. R. Farrar, $2; 3d, J. S. Chase, $1.
Salem:
1st, W. G. Kendall, $2; 2d, J. L. Bird, $1.
Isabella:
1st, W. G. Kendall, $2.
Vergennes:
1st, J. S. Chase, $2.
Any other variety;
1st, E. L. Lewis, Eaton, $4; 2d, E. R. Farrar, Worden, $3; 3d, C. W. Libby, Diamond, $2; 4th, W. G. Kendall, Campbell's Early, $1.

Special Prizes.

Cranberries.— Collection of not less than five varieties, half-peck of each:
1st, Indian Head Cranberry Co., $5.
Half-peck of any variety:
1st, Indian Head Cranberry Company, Bugle, $2.

Gratuities:—

G. V. Fletcher, Bartlett Pears, $1.
T. S. Hubbard Company, collection of fifty varieties of Grapes, a Silver Gilt Medal.

Chrysanthemum Show.

November 8, 9, 10.

Special Prizes.

For the most tastefully decorated table of Fruits, eight feet by five feet:
1st, Edward MacMulkin, $40; 2d, Isaac Locke & Co., $30; 3d, Winn, Ricker & Co., $20; 4th, F. Heeremans, $10.

Wilfrid Wheeler
Charles F. Curtis
J. Willard Hill
} *Committee on Fruits.*

REPORT OF THE COMMITTEE ON VEGETABLES FOR THE YEAR 1907.

BY ISAAC H. LOCKE, CHAIRMAN.

The Vegetable Committee for 1907 begs leave to report that the several exhibitions of the Society in which vegetables have been shown have had very creditable displays of the different specimens in competition, and the entries have in most cases been so uniformly of excellent quality that it has been difficult to decide as to which was most deserving of credit.

The unfavorable weather conditions prevailing in the early part of the growing season made it seem as though the growers would not be able to make the usual excellent display of the products of the farm and garden that have for so many years been the pride of the Society; but the improved methods of cultivation, and other means, which are available in agriculture on our market gardens, together with the postponement of a week in the date of the summer exhibitions, enabled exhibitors to show specimens equal to those of previous years.

In the exhibition of June 8th cauliflowers were shown by W. J. Clemson deserving of special mention for excellence. The display of vegetables at the October exhibition was especially good and, among others, The New Hampshire College showed, under the direction of Prof. Hall, a large variety of vegetables, and particularly of squashes, of which the College is making a special feature, with the purpose of bringing out, by crossing, some new varieties which will prove valuable for cultivation.

In addition to the regular vegetable prizes offered at the Chrysanthemum Show in November, special prizes were offered for the best collection of not less than fifteen varieties, to be competed for by private gardeners only, and resulted in bringing out some attractive displays. The first prize, which was a Silver Cup valued at $75.00, given by Messrs. R. & J. Farquhar & Co., was awarded to Giraud Foster of Lenox.

In addition to the regular prizes awarded during the year, gratuities were given A. W. Crockford for cucumbers, and M. W. Chadbourne for artichokes. Red Drumhead cabbage, shown by Mrs. A. P. Peabody, and a novelty collection, by Charles W. Parker, received Honorable Mention in October, and onions of the "Ailsa Craig" variety, shown by A. H. Wingett of Lenox, and potatoes of the "Delaware" and "Breck's Pride" varieties, shown by Charles A. Stone of Plymouth, received Honorable Mention in November.

The amount awarded in prizes and gratuities was $863.00, and in addition one Silver Medal and one Bronze Medal, and also $40.00 as Special Prizes at the November exhibition.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1907.

January 26.

Cauliflowers.— Four specimens:
1st, C. M. Handley Estate, $3; 2d, E. R. Teele, $2.
Celery.— Four roots:
1st, W. Heustis & Son, $3; 2d, E. L. Lewis, $2; 3d, W. Heustis & Son, $1.
Mushrooms.— Twenty-four specimens:
1st, Mrs. A. A. Warburton, $3.
Parsley.— Four quarts:
1st, Mrs. A. A. Warburton, $2.
Salsify.— Twelve specimens:
1st, W. Heustis & Son, $3; 2d, E. R. Teele, $2.
Collection of Vegetables.— Not less than four varieties:
1st, E. L. Lewis, $5; 2d, Mrs. A. A. Warburton, $3.

Spring Exhibition.

March 22, 23, 24.

William J. Walker Fund.

Cucumbers.— Pair.
1st, W. W. Rawson, $3; 2d, Halifax Gardens Co., $2.
Dandelions.— Peck:
1st, A. E. Hartshorn, $3; 2d, W. Heustis & Son, $2.

Lettuce.— Four heads:
1st, A. E. Hartshorn, $3; 2d, W. W. Rawson, $2; 3d, W. Whitman, $1.
Mushrooms.— Twelve specimens:
1st, F. Heeremans, $3.
Parsley.— Four quarts:
1st, A. E. Hartshorn, $2; 2d, W. W. Rawson, $1.
Radishes.— Four bunches of Turnip Rooted:
1st, W. W. Rawson, $3; 2d, Halifax Gardens Co., $2; 3d, N. F. Comley, $1.
Collection of Vegetables.— Not less than four varieties:
1st, W. W. Rawson, $5.

Gratuity:—

M. W. Chadbourne, Artichokes, $1.

May 4.

William J. Walker Fund.

Asparagus.— Four bunches, twelve stalks each:
1st, Edward Parker, $3.
Beets.— Twelve specimens:
1st, A. E. Hartshorn, $3.
Cucumbers.— Pair of White Spine:
1st, G. D. Moore, $3.
Dandelions.— Peck.
1st, J. B. Shurtleff, Jr., $3; 2d, Mrs. Frederick Ayer, $2; 3d, A. E. Hartshorn, $1.
Lettuce.— Four heads:
1st, G. D. Moore, $3; 2d, Mrs. A. W. Blake, $2; 3d, A. E. Hartshorn, $1.
Parsley.— Four quarts:
1st, W. J. Clemson, $2; 2d, A. E. Hartshorn, $1.
Radishes.— Four bunches:
1st, Edward Parker, $3; 2d, A. E. Hartshorn, $2; 3d, G. D. Moore, $1.
Rhubarb.— Twelve stalks, open culture:
1st, G. D. Moore, $3; 2d, Mrs. A. A. Warburton, $2; 3d, Edward Parker, $1.
Collection of Vegetables.— Not less than four varieties:
1st, Edward Parker, $5.

June 8.

Theodore Lyman Fund.

Asparagus.— Four bunches, twelve stalks each:
1st, G. F. Wheeler, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.

Carrots.— Four bunches:
1st, W. W. Rawson, $3; 2d, A. E. Hartshorn, $2.

Cucumbers.— Pair:
1st, G. D. Moore, $4; 2d, W. W. Rawson, $3; 3d, A. E. Hartshorn, $2; 4th, W. J. Clemson, $1.

Lettuce.— Four heads:
1st, W. W. Rawson, $4; 2d, G. D. Moore, $3; 3d, W. Whitman, $2; 4th, W. J. Clemson, $1.

Radishes.— Four bunches:
1st. W. W. Rawson, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.

Rhubarb.— Twelve stalks, open culture:
1st, George Page, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.

Spinach.— Peck:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2; 3d, W. J. Clemson, $1.

Collection of Vegetables.— Not less than four varieties; decorative arrangement to be considered:
1st, W. J. Clemson, $5.

Rose and Strawberry Exhibition.

June 29 and 30.

Beets.— Twelve Turnip Rooted, open culture:
1st, Edward Parker, $3; 2d, G. D. Moore, Egyptian, $2; 3d, W. Heustis & Son, Egyptian, $1.

Cabbages.— Four specimens:
1st, G. D. Moore, Henderson's Early Summer, $3; 2d, G. D. Moore, Early Jersey Wakefield, $2; 3d, W. Heustis & Son, Early Jersey Wakefield, $1.

Carrots.— Four bunches:
1st, A. E, Hartshorn, $3.

Cucumbers.— Four specimens:
1st, G. D. Moore, White Spine, $3.

Lettuce.— Four heads:
1st, E. L. Lewis, Deacon, $3; 2d, E. L. Lewis, Sutton, $2; 3d, W. J. Clemson, Big Boston, $1.

Peas.— Gradus, half-peck:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

Eclipse or Nott's Excelsior:

1st, Edward Parker, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

Any other variety:

1st, W. J. Clemson, Early Morn, $3; 2d, E. L. Lewis, Gregory's Surprise, $2.

ONIONS.— Twelve specimens:

1st, Edward Parker, Silver King, $3; 2d, E. L. Lewis, Silver Skin, $2; 3d, W. J. Clemson, White Globe, $1.

COLLECTION OF VEGETABLES.— Not less than six varieties; decorative arrangement to be considered:

1st, Edward Parker, $5; 2d, W. J. Clemson, $4; 3d, E. L. Lewis, $3.

JULY 20.

BEANS.— Half-peck of Wax:

1st, Edward Parker, Wardwell Kidney Wax, $3; 2d, Joseph Thorpe, Davis Golden Wax, $2; 3d, A. E. Hartshorn, Currie's Rust-proof, $1.

Half-peck of Green:

1st, Mrs. A. W. Blake, Giant Stringless, $3; 2d, Mrs. E. J. Whitney, Longfellow, $2; 3d, Edward Parker, Burpee's Stringless, $1.

BEETS.— Twelve specimens:

1st, E. L. Lewis, Crosby's Egyptian, $2; 2d, Edward Parker, Crosby's Egyptian, $1.

CABBAGES.— Four specimens:

1st, W. Heustis & Son, Succession, $3; 2d, Edward Parker, Early Woffler, $2.

CUCUMBERS.— Four specimens:

1st, A. W. Crockford, Crockford's Columbia, $3; 2d, A. E. Hartshorn, White Spine, $2; 3d, W. J. Clemson, White Spine, $1.

LETTUCE.— Four heads:

1st, W. Heustis & Son, Tennisball, $3; 2d, E. L. Lewis, Sutton's Standwell, $2; 3d, E. L. Lewis, Big Boston, $1.

ONIONS.— Twelve specimens:

1st, Edward Parker, Silver King, $3; 2d, W. J. Clemson, Silver King, $2; 3d, E. L. Lewis, Silver Skin, $1.

PEAS.— Half-peck, late varieties:

1st, Mrs. E. J. Whitney, Admiral Dewey, $3; 2d, A. E. Hartshorn, Admiral Dewey, $2; 3d, Mrs. A. W. Blake, Superlative, $1.

SQUASHES.— Summer, Long Warted, four specimens:

1st, A. E. Hartshorn, $3; 2d, W. Heustis & Son, $2; 3d, E. L. Lewis, $1.

Summer, Scallop, four specimens:

1st, W. Heustis & Son, $3; 2d, E. L. Lewis, $2.

TOMATOES.— Twelve specimens:

1st, Wilfrid Wheeler, Comet, $3; 2d, W. J. Clemson, Stirling Castle, $2; 3d, A. W. Crockford, Crockford's Forcing, $1.

Collection of Vegetables, not less than eight varieties; decorative arrangement to be considered:
1st, Edward Parker, $5.

Gratuity:—

A. W. Crockford, Collection of Cucumbers, $1.

August 17.

Beans.— Two quarts, shelled:
1st, E. L. Lewis, $3; 2d, Joseph Thorpe, $2; 3d, Mrs. E. J. Whitney, $1.
Cabbages.— Three specimens:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, W. Heustis & Son, $1.
Celery.— Four roots of any variety:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, Walter Warburton, $1.
Lettuce.— Four heads:
1st, E. L. Lewis, $3; 3d, Edward Parker, $1.
Onions.— Twelve specimens:
1st, E. L. Lewis, Prize Taker, $3; 2d, W. J. Clemson, Prize Taker, $2; 3d, E. L. Lewis, Giant of Gibraltar, $1.
Peppers.— Twelve specimens:
1st, E. L. Lewis, Chinese Giant, $3; 2d, E. L. Lewis, Ruby King, $2; 3d, Edward Parker, Squash, $1.
Potatoes.— Twelve specimens of any variety:
1st, W. J. Clemson, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, E. L. Lewis, Early Fortune, $1.
Squashes.— Marrow:
1st, E. L. Lewis, $3.
Sweet Corn.— Twelve ears of any variety:
1st, G. F. Wheeler, Crosby, $3; 2d, E. L. Lewis, Early Mammoth, $2; 3d, E. L. Lewis, Early Champion, $1.
Tomatoes.— Twelve specimens:
1st, Wilfrid Wheeler, Stone, $3; 2d, Edward Parker, Chalk's Early Jewell, $2; 3d, W. J. Clemson, Chalk's Early Jewell, $1.
Collection of Vegetables.— Not less than six varieties; decorative arrangement to be considered:
1st, Edward Parker, $5; 2d, E. L. Lewis, $3; 3d, W. J. Clemson, $2.

Dahlia Exhibition.

September 4 and 5.

Beans.— Two quarts of Lima:
1st, W. J. Clemson, $3; 2d, Edward Parker, $2; 3d, G. B. Gill, $1.
Beets.— Twelve specimens:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, W. Heustis & Son, $1.
Cabbages.— Three of any variety, trimmed:
1st, E. L. Lewis, $3.
Celery.— Four roots:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, Mrs. A. A. Warburton, $1.
Melons.— Sweet:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2.
Watermelons:—
1st, E. L. Lewis, $3; 2d, Edward Parker, $2; 3d, Joseph Thorpe, $1.
Onions.— Twelve specimens:
1st, W. J. Clemson, Prize Taker, $3; 2d, E. L. Lewis, Giant of Gibraltar, $2; 3d, W. J. Clemson, Prize Taker, $1.
Parsnips.— Twelve specmens:
1st, W. J. Clemson, Hollow Crown, $3; 2d, E. L. Lewis, Dobbie's Selected, $2; 3d, W. J. Clemson, Long Smooth, $1.
Squashes:
1st, E. L. Lewis, Marrow, $3; 2d, E. L. Lewis, Hubbard, $2; 3d, Edward Parker, Turban, $1.
Tomatoes.— Twelve specimens:
1st, Edward Parker, Stone, $3; 2d, Frederic Cole, Stone, $2; 3d, E. L. Lewis, Stone, $1.
Collection of Vegetables.— Not less than six varieties; decorative arrangement to be considered:
1st, E. L. Lewis, $8; 2d, Edward Parker, $5.

Annual Exhibition of Fruits and Vegetables.

October 10 and 11.

Beets.— Twelve specimens:
1st, W. W. Rawson, Crosby's Egyptian, $3; 2d, E. L. Lewis, Crimson Globe, $2; 3d, E. L. Lewis, Crosby's Egyptian, $1.
Brussels Sprouts.— Half-peck:
1st, A. E. Hartshorn, $3; 2d, Mrs. A. W. Blake, $2; 3d, E. L. Lewis, $1.
Cabbages.— Three Drumhead, trimmed:
1st, Mrs. J. L. Gardner, $3; 2d, W. W. Rawson, $2; 3d, E. L. Lewis, $1.

Three Savoy, trimmed:
1st, Mrs. J. L. Gardner, $3; 2d, A. E. Hartshorn, $2; 3d. E. L. Lewis, $1.

Carrots.— Twelve Long Orange:
1st, E. L. Lewis, $3; 2d, N. H. College of Agriculture, $2.
Twelve Intermediate:
1st, J. P. Wyman, $3; 2d, E. L. Lewis, $2; 3d, J. A. Nixon, $1.

Cauliflowers.— Four specimens:
1st, W. H. Teele, $4; 2d, DeSouza Bros., $3; 3d, C. M. Handley Estate, $2.

Celery.— Four roots of Paris Golden:
1st, E. L. Lewis, $4; 2d, Edward Parker, $3; 3d, W. J. Clemson, $1.
Any other variety:
1st, Edward Parker, $4; 2d, N. H. College of Agriculture, $3; 3d, E. L. Lewis, $1.

Corn.— Sweet, twelve ears:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. C. Wakefield, $1.

Cucumbers.— Pair of White Spine:
1st, W. W. Rawson, $4; 2d, N. H. College of Agriculture, $3; 3d, W. W. Rawson, $2.
Pair of any other variety:
1st, N. H. College of Agriculture, Perfection, $3; 2d, N. H. College of Agriculture, Davis Perfect, $2.

Culinary Herbs, Green.— Collection, named:
1st, J. A. Nixon, $3; 2d, Edward Parker, $2.

Egg Plant.— Four Round Purple:
1st, Edward Parker, Black Beauty, $3; 2d, W. J. Clemson, N. Y. Improved, $2; 3d, F. E. Coolidge, $1.

Endive.— Four specimens:
1st, E. L. Lewis, Broad Leaf, $3; 2d, W. J. Clemson, Batavia, $2; 3d, A. E. Hartshorn, Green Curled, $1.

Lettuce.— Four heads:
1st, A. E. Hartshorn, Big Boston, $3; 2d, E. L. Lewis, $2; 3d, W. W. Rawson, Tennisball, $1.

Onions.— Twelve Danvers:
1st, J. A. Nixon, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. J. Clemson, $1.
Twelve Red:
1st, W. J. Clemson, Red Globe, $3; 2d, J. A. Nixon, Red Wethersfield, $2; 3d, E. L. Lewis, Red Wethersfield, $1.
Twelve White:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, Walter Warburton, $1.

Parsley.— Four quarts:
1st, A. E. Hartshorn, $3; 2d, W. W. Rawson, $2; 3d, Mrs. A. W. Blake, $1.

Parsnips.— Long, twelve specimens:
1st, W. W. Rawson, $3; 2d, W. J. Clemson, $2; 3d, J. P. Wyman, $1

Twelve Hollow Crown:

1st, W. J. Clemson, $3; 2d, Walter Warburton, $2; 3d, J. P. Wyman, $1.

PEPPERS.— Twelve specimens of Squash:

1st, Edward Parker, $3; 2d, E. L. Lewis, $2; 3d, N. H. College of Agriculture, $1.

Any other variety:

1st, Edward Parker, Chinese Giant, $3; 2d, Mass. Agricultural College, Neapolitan, $2; 3d, Walter Warburton, $1.

POTATOES.— Twelve Hebron:

1st, W. J. Clemson, $3; 2d, Elliott Moore, $2; 3d, E. L. Lewis, $1.

Twelve Rose:

1st, W. J. Clemson, $3; 2d, N. H. College of Agriculture, $2; 3d, Charles Scully, $1.

Twelve of any other variety:

1st, N. H. College of Agriculture, Carmen, $3; 2d, N. H. College of Agriculture, Green Mountain, $2; 3d, A. E. Hartshorn, Green Mountain, $1.

RADISHES.— Four bunches:

1st, J. P. Wyman, $3; 2d, W. W. Rawson, $2; 3d, J. A. Nixon, $1.

SALSIFY.— Twelve specimens:

1st, W. J. Clemson, $3; 2d, A. E. Hartshorn, $2; 3d, Mrs. A. P. Peabody, $1.

SQUASHES.— Three Bay State:

1st, N. H. College of Agriculture, $3; 2d, E. L. Lewis, $2.

Three Hubbard:

1st, A. E. Hartshorn, $3; 2d, Mass. Agricultural College, $2; 3d, F. E. Coolidge, $1.

Three Hybrid Turban:

1st, N. H. College of Agriculture, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Three Marrow:

1st, N. H. College of Agriculture, $3; 2d, E. L. Lewis, $2; 3d, J. P. Wyman, $1.

TOMATOES.— Twelve Belmont or Beauty:

1st, W. J. Clemson, Beauty, $3; 2d, N. H. College of Agriculture, Belmont, $2.

Twelve Stone:

1st, Frederic Cole, $3; 2d, Walter Warburton, $2; 3d, Edward Parker, $1.

Twelve of any other variety:

1st, Edward Parker, Chalk's Early Jewell, $3; 2d, Walter Warburton, Aristocrat, $2.

TURNIPS.— Twelve Flat:

1st, Elliott Moore, $3; 2d, E. L. Lewis, $2.

Twelve Swedish:

1st, C. M. Handley Estate, $3; 2d, G. W. Goddin, $2; 3d, E. L. Lewis, $1.

Collection of Vegetables.— Not less than ten varieties; decorative arrangement to be considered:

1st, E. L. Lewis, $25; 2d, N. H. College of Agriculture, $15; 3d, Edward Parker, $10; 4th, W. J. Clemson, $8; 5th, Mrs. A. P. Peabody, $5.

Collection of Salad Plants:

1st, N. H. College of Agriculture, $5; 2d, E. L. Lewis, $3; 3d, Edward Parker, $2.

Gratuities:—

Mrs. A. P. Peabody, Red Drumhead Cabbage, Honorable Mention.

C. W. Parker, Novelty Collection, Honorable Mention.

N. H. College of Agriculture, Improved New Varieties of Squashes, Vote of Thanks.

Chrysanthemum Show.

November 8, 9, 10.

Special Prizes.

Celery.— Eight roots, commercial grown:

1st, E. L. Lewis, a Silver Medal; 2d, Joseph Thorpe, a Bronze Medal.

Regular Prizes.

Beets.— Twelve specimens:

1st, Edward Parker, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.

Brussels Sprouts.— Half-peck.

1st, Elliott Moore, $3; 2d, Mrs. O. B. Jennings, $2; 3d, A. E. Hartshorn, $1.

Cabbages.— Three Red, trimmed:

1st, A. E. Hartshorn, $3; 2d, A. F. Estabrook, $2; 3d, E. L. Lewis, $1.

Three Drumhead:

1st, Mrs. J. L. Gardner, $3; 2d, E. L. Lewis, $2.

Three Savoy, trimmed:

1st, A. E. Hartshorn, $3; 2d, Mrs. J. L. Gardner, $2; 3d, E. L. Lewis, $1.

Cauliflowers.— Four specimens:

1st, DeSouza Bros., $3; 2d, W. H. Teele, $2; 3d, E. L. Lewis, $1.

CELERY.— Four roots, Pascal:

1st, E. L. Lewis, $4; 2d, W. Heustis & Son, $3; 3d, Walter Warburton, $2.

Any other variety:

1st, E. L. Lewis, Paris Golden, $4; 2d, Joseph Thorpe, Paris Golden, $3; 3d, Giraud Foster, Paris Golden, $2.

CORN.— Yellow or Field, twenty-five ears, traced:

1st, Elliott Moore, Longfellow, $3; 2d, Elliott Moore, Moore's Premium, $2; 3d, A. F. Stevens, $1.

CUCUMBERS.— Pair:

1st, Walter Warburton, Telegraph, $3; 2d, Giraud Foster, Telegraph, $2; 3d, W. W. Rawson, $1.

ENDIVE.— Four specimens:

1st, W. J. Clemson, Bavarian, $3; 2d, E. L. Lewis, Giant Fringed, $2; 3d, E. L. Lewis, Broad Leaf, $1.

LEEK.— Twelve specimens:

1st, Walter Warburton, International, $3; 2d, Edward Parker, International, $2; 3d, Giraud Foster, Perfection, $1.

LETTUCE.— Four heads:

1st, Giraud Foster, $4; 2d, W. W. Rawson, $3; 3d, E. L. Lewis, $2.

PARSNIPS.— Twelve specimens of Long Smooth:

1st, W. J. Clemson, $3; 2d, Mrs. O B. Jennings, $2; 3d, E. L. Lewis, $1.

Twelve specimens of Hollow Crown

1st, W. J. Clemson, $3; 2d, Manuel De Souza, $2; 3d, Walter Warburton, $1.

SALSIFY.— Twelve specimens:

1st, A. E. Hartshorn, $3; 2d, W. J. Clemson, $2; 3d, Mrs. O. B. Jennings, $1.

TOMATOES.— Twelve specimens:

1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, Walter Warburton, $1.

COLLECTION OF VEGETABLES.— Not less than ten varieties; decorative arrangement to be considered:

1st, E. L. Lewis, $15; 2d, Edward Parker, $10; 3d, Walter Warburton, $7.

Special Prizes.

(For private gardeners only.)

For the best Collection of Vegetables of fifteen varieties, not more than two kinds of any one variety admissible; tasteful arrangement to be considered:

1st, Giraud Foster, a Silver Cup; 2d, W. J. Clemson, $25; 3d, Mrs. O. B. Jennings, $15.

Gratuities:—

C. A. Stone, display of Potatoes, Honorable Mention.
A. H. Wingett, display of Onions, Honorable Mention.

ISAAC H. LOCKE
DUNCAN FINLAYSON
JOSIAH B. SHURTLEFF, JR.
} *Committee on Vegetables.*

THE MANSION: MORTON F. PLANT ESTATE GROTON, CONN.

REPORT OF THE COMMITTEE ON GARDENS FOR THE YEAR 1907.

BY CHARLES W. PARKER, CHAIRMAN.

The interest in this department of the Society's work has been well maintained during the present year, the number of estates and gardens examined exceeding that of the previous year. There has been a notable increase in the entries for smaller gardens, a feature which has been encouraged by the committee in the preparation of the schedule. There is an impression abroad that the Society is interested only in the grander estates, but, while it delights to call attention to these as showing the possibilities in landscape art on a large scale, it is equally desirous of encouraging the horticultural development of the more modest city and suburban gardens. The various visits of the year are reported upon as follows:

Stephen M. Weld's Estate, Dedham.

By invitation of President Weld the first visit of the season was made May 11 to his estate at Dedham. The mansion is picturesquely situated upon high ground overlooking a great expanse of the valley of the Charles River to the Blue Hills beyond. The immediate home grounds at the time of the visit were adorned with the gorgeous colorings of narcissi, tulips, hyacinths, and other spring-flowering plants.

Of noteworthy interest also were the numerous species of hardy shrubs and the fine specimens of flowering crabs, shadbush, and coniferous trees, all finding a congenial home on the ledges of the hillside.

Descending from the upland there comes into view a romantic valley through which flows a brook breaking into foamy water as it rushes over its rocky bed to the lower level of swampy land

beyond. Along the damp borders some half-dozen species of Trillium were in flower and a colony of *Phlox subulata* carpeted the rocks with its dense inflorescence.

At the upper end of this rocky valley a small pond has been made by damming up the water, forming at its outlet a pretty cascade, while near by, from a cleft in the ledges of the rocky hillside, a stream of water falls into the brook below.

The swampy ground was occupied by the products of nature's own planting, conspicuous among which were the handsome, green, leafy clumps of *Symplocarpus foetidus,* at this season of the year a really attractive adornment.

The gray cliffs above showed prominently in the absence of the foliage of the deciduous trees which forested the entire region. This section of the estate, of nearly a thousand acres, is a beautiful natural park and needs little help from the hand of man in its further adornment.

On the return to the home grounds the committee inspected the several greenhouses filled with a great variety of flowering plants, and attesting the horticultural skill of the head gardener, Thomas Coles.

Joseph R. Leeson's Estate, Newton.

July 12 the committee visited the estate of Hon. Joseph R. Leeson at Newton which had been entered in the competition for the best-kept estate in Massachusetts of from one to three acres. It was found fully up to the requirements of the schedule in every respect. The grounds were well arranged with fine displays of flowering plants together with some especially noteworthy trees, among which were blue spruce, birch, ash, and maple, and in one section on interesting vegetable garden.

Several greenhouses on the estate were attractive with a good collection of foliage and flowering plants and a clump of rhododendrons was appropriately placed in another part of the grounds. The extensive lawn was also a notable feature of the estate.

The fine condition of the entire place showed much good taste on the part of the owner supplemented by the expert knowledge of James Cartwright, the gardener. It was a most satisfactory estate and the committee judges it well worthy of the first prize which is awarded it.

Dr. Charles S. Minot's Peony Garden, Milton.

Dr. Minot's peony garden, which is undoubtedly the finest private collection of peonies in New England, was again offered in competition, and again found worthy of the first prize offered by the Society.

Little need be added to the previous reports of visits to this noteworthy garden except to say that the peonies are all labeled with metal plates on a rod, giving the name of the variety, the date, and from whom the plant was obtained.

Morton F. Plant's Estate, Groton, Conn.

August 9 the committee inspected the estate of Morton F. Plant at Groton, Connecticut, now in its third and last year of entry for the H. H. Hunnewell Triennial Premium.

Mr. Craig, a member of the visiting committee, has kindly furnished the following notes concerning the estate.

"Many important changes have been made since the committee's visit of last year. Considerable additional land has been cleared of rocks, trenched, graded, and planted. (Some of the largest rocks we were pleased to note had been retained, and materially add to the picturesqueness of the place).

A number of large trees have been successfully moved with frozen balls during the past winter, including gingko, purple beech, maple, and white birch, also a few evergreens of specimen size. These assist in giving the new grounds a more finished appearance.

The flower garden was very attractive, the herbaceous perennials especially so. A collection of fifty varieties of sweet peas was in excellent bloom and included all the newest and most up-to-date sorts. In the greenhouses splendid crops of grapes, peaches, and nectarines were noted. Everything on the place was in fine condition and the visiting members of the committee are pleased to report favorably on this great estate and to commend the able management of the superintendent, Thomas W. Head."

Frank P. Briggs' Vegetable Garden, Ayer.

September 11 the garden of Frank P. Briggs on High Street, Ayer, which had been entered for the prize offered for the best vegetable garden on an estate of twenty thousand feet or less, was visited by a member of the committee. Mr. Briggs' estate is pleasantly situated on high ground commanding an extensive view of the surrounding country and is tastefully adorned with flowering plants, vines, and fruit trees.

The vegetable garden occupied fully one-half of the land and was devoted to the cultivation of the ordinary varieties of vegetables generally grown for family use.

The appearance of the garden as well as of the whole estate impressed the visitor very favorably. Everywhere was evidence of the thrift, economy, and neatness insisted upon by the rules of the committee.

Three sides of the grounds were inclosed by a wire fence which was completely concealed with woodbine and clematis, the latter in fine flower on the occasion of the visit.

In addition to vegetables Mr. Briggs also grows several varieties each of grapes, currants, raspberries, blackberries, pears, apples, and plums.

Altogether it is a garden that the committee is pleased to point to as a model and well worthy of the first prize awarded it.

Mr. Briggs is a locomotive engineer and when off duty can usually be found occupied in his gardening work in which he is enthusiastically interested.

H. H. Rogers' Chrysanthemum Houses, Fairhaven.

November 18 the committee visited Fairhaven, Massachusetts, to inspect two houses of chrysanthemums on the estate of H. H. Rogers, Esq. Although a dull November day outside, within all was changed to brightness by the glorious masses of bloom.

The two large houses presented a beautiful sight and the plants were arranged in a tasteful and artistic manner. In the center of the larger house were long lines of bush-grown plants in pots

forming a long rounded mound of flowers, the decorative effect of which was enhanced by a margin of foliage plants and ferns, while banks of chrysanthemums of every hue filled the sides and ends of the house.

The smaller house was devoted to the plants grown to a single flower, the shorter ones near the entrance, gradually increasing at the further end to a height of six feet.

The committee is pleased to award Mr. James Garthly, the superintendent of the estate, a silver medal in recognition of his ability as a cultivator of the chrysanthemum.

There were no entries for the prizes offered for the best flower garden nor for the best garden of hardy roses. Several entries for the special prizes offered for an estate and for vegetable gardens, other than those mentioned herewith, were received during the season and attention given to them. They were not, however, in the opinion of the committee, up to the Society's standard of excellence. While in most cases the gardens by themselves were satisfactory the immediate surroundings showed a lack of the neatness, thrift, and economy insisted upon by the committee.

In this connection attention may well be called to the lack of tidiness in a majority of the city and suburban gardens. Large estates, as a rule, employing more help, are kept in good condition, but it seems to be exceptional to find smaller places kept in good order, although they may be well supplied with flower beds and vegetable gardens.

The following is a list of the prizes awarded for the year:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:

First, Morton F. Plant, Groton, Connecticut . . $160.00

Special Prize.

For the best-kept estate in Massachusetts of not more than three acres or less than one acre:

First, Joseph R. Leeson, Newton $50.00

Society's Prizes.

For the best Vegetable Garden, not commercial:

First, Frank P. Briggs, Ayer, Silver Medal and . 10.00

For the best Peony Garden, not commercial:

First, Dr. Charles S. Minot, Milton . . . 30.00

Special Awards.

Stephen M. Weld, Estate at Dedham, Honorable Mention.

James Garthly, for skilful cultivation of chrysanthemums, Silver Medal.

CHARLES W. PARKER
OAKES AMES
GEORGE BARKER
WM. N. CRAIG
WM. H. ELLIOTT
A. F. ESTABROOK
A. H. FEWKES
J. A. PETTIGREW
W. W. RAWSON
W. P. RICH
H. P. WALCOTT
S. M. WELD

Committee on Gardens.

A HOME GARDEN AT LYNN MASS.

REPORT OF THE COMMITTEE ON CHILDREN'S GARDENS FOR THE YEAR 1907.

BY HENRY SAXTON ADAMS, CHAIRMAN.

The year 1907 has brought to your committee the fruit of its previous work and experience. The entries for our various garden contests have not only been greater in number but have extended over a larger area, showing that not only is the children's garden movement spreading, but that we have come into close touch with the movement throughout the state. We had a total of forty-nine entries from thirty-two different places. Let us note the progress of the school garden movement during the year.

A most successful School Garden Conference was held in February as an all-day meeting of the Massachusetts School Superintendents' Association at Tremont Temple. This meeting was divided into four sections, taking up at each section various phases of the movement in its relation to the city, country, suburb, and village. The Society was represented at this meeting by your chairman. A large number of enthusiastic school superintendents, teachers, and others were at the conference and from the interest shown it is evident that the school superintendents of Massachusetts are seriously taking up the matter of school gardens.

It is to be expected that the movement will gain a foothold in many locations the present year, and there is no greater opportunity for our Society to do good work than through the efforts of its committee on children's gardens. It is most interesting to observe the results which our awarding of prizes to gardens has brought about. In one case school gardening was taken up experimentally on borrowed land. It was made enough of a success to be awarded one of our prizes and thus encouraged and interested the trustees of the institution where the experiment was made, purchased the land, not only insuring school gardens but also adding materially to the equipment of the institution. In other places our prizes have

not only helped to maintain the gardens but the fact that the gardens were worthy of a prize given by our Society has given an impetus to the movement. The people see their value and are willing to help. Surely the Massachusetts Horticultural Society has done more than any other organization to introduce and encourage school gardening. It is to be hoped that nothing may interfere with its continuing the good work.

At the summer school of the Massachusetts Agricultural College, Amherst, where school gardening was made of the first importance, a large number of teachers from this state, as well as from outside, learned a great deal of school gardening and became most enthusiastic over the movement. This summer school will no doubt do much to stimulate teachers to take up school garden work and we may look for abundant returns. We are really most fortunate in having a progressive institution of this sort in our state and can properly feel that we had no little part in bringing about this first summer school. Step by step the movement has been followed and we have been in close touch with Professor Waugh who more than any other person successfully carried out the summer school of 1907.

With this summer school at Amherst, the increased interest in school gardens among our school superintendents, and with more definite work at the normal schools, we can feel that it is only a question of time when our teachers will be properly equipped for school garden work. It may be interesting to note here that Smith, Mt. Holyoke, and Wellesley Colleges all have courses in gardening which provide a proper foundation for school garden work. At Wellesley a superb new equipment has been provided for garden work. School gardening is but a form of nature study and industrial education for our schools. Let us hope that the work will be carried on carefully and thoughtfully.

The season of 1907 was hard on children's gardens. The late spring followed by the dry summer made it most discouraging, and although the results in the early part of the summer did not seem at all promising our exhibit in September was even superior to last year's excellent show. Your committee has continued the policy of visiting gardens and discussing the work with the teachers and the children, and have found these visits as inspiring as in other seasons.

Surely one has but to study the school-garden movement and its results to become an enthusiast.

Children's Garden Conference.

The third School Garden Conference was held December 14th and considering the adverse weather was well attended. Those who came were enthusiastic and interested and had we had more favorable weather it is safe to say that the audience would have been nearly twice as large as at any previous conference.

In arranging the program for this conference it was desired to bring out as much as possible the relation of nature study and school gardening and our speakers were well qualified to discuss these matters. Unfortunately, owing to illness, two addresses, one by Mr. Edward V. Hallock, who was to talk on Horticulture in Public Schools, and the other by Miss McCloskey of Cornell University, had to be omitted. The program as given contained four addresses: The Relation of School Gardens to Nature Study, by Miss Stebbins, Supervisor of Nature Study at Springfield; Natural Science Gardens, by Principal Boyden of the State Normal School at Bridgewater; School Gardens in Institutions, by Miss Fletcher, Superintendent of the Orphans' Home, New Bedford; and The Amherst Summer School, by Mr. Thomas Curley of the Waltham Home Garden Association, Waltham. Mr. Curley spoke most enthusiastically of the work of our committee.

An excellent display of photographs and drawings was made at the conference, a large part of which came from the Lynn Public Schools. The conference was presided over by your chairman who after reviewing the work of the year announced the prizes for school gardens, school grounds, and home gardens. Abstracts of the addresses are given in connection with this report.

School Gardens.

There were entered this year for prizes twenty-eight school gardens, not only a larger number than last year but over a more extended area. It was most difficult in awarding prizes to some of

these gardens but we believe our methods are the only ones possible for such work and that the results in enthusiasm and help to the gardens receiving these prizes justify the continuance of this method of encouraging school gardens. In spite of the season we received many excellent reports some of which are appended to this report.

School Grounds.

Seven entries were received for prizes for school grounds. While this was most encouraging we were disappointed in receiving only one report of the work accomplished. This was probably due to the poor season but we feel it is a most important part of school gardening and that it should be encouraged.

Children's Home Gardens.

The entries for home gardens this year were made by organizations managing and financing home-garden work. This method of awarding the prizes was adopted so that the money distributed should go to those who carry on this work rather than to the children who received their help and encouragement from the organization. We were exceedingly pleased to receive fourteen entries in this class and the results were gratifying. The Marlboro Home Gardening Association was established this year and made great progress. We awarded it first prize. Certainly no better work can be done than encouraging children's home-gardening organizations.

Children's Exhibition.

Our Children's Exhibition was held the 7th of September and nearly filled the large exhibition hall. The products which were brought in were in most cases excellent and your committee had great difficulty in awarding prizes. The daily press took a great interest in this exhibition as well as in the school garden conference and our work was well represented by them. It is expected that even better shows will be held in the future although our 1907 show

will be hard to beat. Here the prizes were given to school gardens, home gardens, and to the children; and to our method of reaching these gardens by visits and correspondence is largely due the satisfactory exhibits brought in.

Your chairman wishes to thank the members of the committee for their support during the year and feels that our success has been due to the individual efforts of the members of the committee and to their combined work during the trying times of awarding prizes as well as at committee meetings. It is the earnest hope of the committee that the school-garden work shall continue and that even better results may be obtained in the future.

Abstracts of Addresses made at the Children's Garden Conference.

Held at Horticultural Hall, Boston, December 14, 1907.

The Relation of School Gardens to Nature Study.

BY MISS FANNIE A. STEBBINS, SUPERVISOR OF NATURE STUDY, SPRINGFIELD, MASS.

If we take as a statement of the object of Nature Study that it is to cultivate in the child an intelligent interest in the world about him, the question of the relation of the school garden to Nature Study is simplified.

We wish the child to form the habit of observing, as correctly as may be, series of facts, noting relations of cause and effect and drawing conclusions from the facts observed; then carrying the work further by working out theories which he may prove or disprove.

For the establishment of many facts the school garden is the best possible laboratory or workshop. The individual plot supplies the added incentive of the feeling of personal ownership and responsibility; and where it is possible to have individual plots they should be used. The child sees more clearly his own relation to the plant's growth, or lack of it, and feels more keenly the need of care and of knowledge to precede that care. Un-

der proper guidance and conduct of class plots the pupils may be stimulated to repeat the experiments at home, as is frequently done, where conditions a little different produce different results, and comparisons of such results may be made extremely valuable. So even if land be limited much may be accomplished by observation plots.

One line of work that ought to be carried out is the cultivation of many of our most common commercial products which are considered in geography but which are only names to the majority of the pupils. Some of the grains — wheat, corn, rye, oats, buckwheat, barley, etc.— can be easily grown. Hemp and flax together with some of the less common products which the U. S. Dept. of Agriculture is introducing could well be observed.

In one of our schools flax grown by the children was soaked, and by the janitor, who had done the work in Ireland, worked or treated until the fibre was ready for spinning. A valuable lesson or series of lessons.

Another phase is the gathering and growing of many of our formerly common wild flowers which are fast disappearing from the neighborhood of cities, and are seldom seen by the children. Many valuable lessons can be learned by watching the plant through its year of life; how it breaks through the soil; how parts are protected, each part fitted for its duties; the blooming, with interesting peculiarities, formation, protection, and dissemination of seeds; preparation for winter, etc. So the child becomes acquainted with the plant as he almost never does in its home without.

The reproduction of plants can best be studied in the yard where the class can be taken at any time; sowing the seeds, the best manner for individual kinds; layering; budding; grafting; and with the latter the study of where the sap comes; rings of growth; where new wood comes; real meaning of a bud, whether flower or branch bud; need of keeping out fungi; etc.; incidentally how and when to trim a tree; to treat wounds, etc. With the coming of the flowers, the visits of insects, cross-pollination, self-pollination or no pollination, hybridization, crossing squash and melon, etc., can be observed. As the cutworms or other insects come, the suggestion of studying their life histories becomes a vital question that the best means may be discovered of combating these enemies in the most vulnerable stage of their existence. Caterpillars which are injurious may in their butterflyhood do some good and so help balance accounts. Ichneumon flies which parasite pests may be recognized as helpers. And of course our friend, the toad, should be watched, both indoors where more accurate observations can be made of amount of food, etc., and outside where one should be established in the garden if possible and treated as a friend. The garden may give opportunity to recognize birds among our friends.

The study of soils receives new meaning when the effect of different kinds upon the growth of plants is observed. In this connection the study of capillary attraction receives reinforcement in observing the work of a

mulch. This broadens out into the study of the soil of the forest, its influence in the retention of water, the desirability of forests at the head waters of rivers, and the need of reforesting cut areas.

And so one could go on multiplying instance after instance where principles observed in one connection receive their application in another connection and so make deeper and broader impression on the child's mind. He comes to see more and more of the inter-relation of all things, our dependence upon the life about us, and our need of studying the laws underlying all, that we may bring under control those forces which aid in our better living.

In a word then I would characterize the school garden as a laboratory in which can be worked out many problems, under control, and in a comparatively short time, the answers to which are necessary to an intelligent comprehension of the great world about us; and the child's desire to make plants grow furnishes a keen incentive to such experimentation.

Natural Science Gardens.

BY ARTHUR C. BOYDEN, PRINCIPAL, STATE NORMAL SCHOOL, BRIDGEWATER, MASS.

Nature study is distinctly an out-of-door subject. It has a number of phases. The first phase, probably the one with which most of us started, consists in bringing in things from out of doors for study, or in raising the living plants and animals in the school room for study. Of course this phase will always have to continue, more or less. The second phase consists of walks with the children or excursions to see things which could not be brought into the school room and perhaps would not otherwise be seen by the children; the kind of work which culminates in field work with older students. This phase we shall always have to continue. The third phase includes the school and home gardens where the children are doing the actual work, either in raising flowers and vegetables for the purpose of learning the lessons about them or for some other valuable purpose. This will always be an important part of nature study.

There is a fourth phase which is now appearing, known as the natural science garden. Your chairman in extending the invitation to me asked me to say a few words about what I saw in my recent visit to the Western States. I found in four of the best normal schools these natural science gardens either in full working order or in the process of preparation. The natural science garden consisted of a number of acres attached to the institution for the use of the children and for the training of teachers. There was enough land for the raising of desired crops, for plant experiments of various kinds, and for the school gardens. In connection with

the garden there was a greenhouse and a trained gardener was in charge. The greenhouse was for the laboratory work connected with the experiments of the garden and for the use of the students in preparing for the garden. On the grounds a plan was being worked out of having all the trees and shrubs of the state represented so that the children could have a broad view of the resources of their state, and, furthermore, these trees would attract a great variety of birds. Finally they had set aside a little plot for a miniature forest, in order to teach some of the lessons of forestry.

At the Bridgewater school we are laying out nearly two acres for a similar garden, to serve as an out-of-door biological laboratory.

What is the use of such a garden? It provides an abundance of growing material for the different lines of nature study for the younger children; crops can be raised in connection with geography. With the older children in the grammar grades and high school it furnishes the opportunity to teach the elements of agriculture, horticulture, and floriculture, and still further it is an out-of-door laboratory for the study of biology with all of its problems of insect and bird life. We have had our chemical laboratory, our physical laboratory, our indoor biological laboratory; this adds the out-of-door laboratory for all combined.

You see then we have somewhat of a larger view of the work that is before us.

It is distinctly in line with the changes in the other subjects of the curriculum. Changes have come about in the arithmetic of the school through the selection of subjects of practical value. In geography we have emphasized the life side of the different peoples, and given commercial geography a leading position. In history we are beginning to make the children see that they study the things of the past not because of the past but to understand the problems of today. The wise teacher makes a connection with real life in every subject.

In manual training the tendency toward vocational industries is very marked. In nature study we shall go on with a definite purpose with the younger pupils; it is to open their eyes to nature and its changes. With the older pupils it becomes a definite training in the industries of nature.

We shall require in the high and normal schools these broad natural science gardens which will include the school gardens as well as many other things.

One other interesting observation I made in one of the large cities of Illinois. They have at the ends of the city two large school buildings; at each of these the children, working with the janitor, have made a simple greenhouse; an old heater was put in, and such equipment as the children could make. In the fall and winter the children slipped and potted hundreds of plants that would be used for all the school grounds in the spring. From those two ends of the city went these little plants for decorating purposes on the school grounds. I went to every school building and yard and they were equipped with the simple variety of flowers which the chil-

dren prepared. Not a single school yard had a fence around it and not a plant had been injured. Naturally, because all of the children of the city were interested in their grounds and they had contributed their labor. The plants that were left over the children from different parts of the city were welcome to take, provided they would care for them in their yards and contribute the slips for the winter. As I went through the city, particularly in the poorer districts, there were these same plants beautifying every home.

On the useful side, they planted tomato seeds and other vegetables, and at the end of the season there was a little agricultural exhibit in the school buildings. The whole thing was a civic contribution to their city. The focusing of nature study work on some definite results is coming. A few years ago some were a little skeptical of the outcome, but now it is part of the industrial movement which is connecting school studies with the problems of real life.

School Gardens in Institutions.

BY MISS E. MABEL FLETCHER, SUPERINTENDENT OF THE ORPHANS' HOME, NEW BEDFORD, MASS.

The manual art of gardening as a part of modern education is no longer considered as an ornamental appendage of school work, but as one of its important factors in instruction and training, with its advantages for general and technical education. Not only in schools, clubs, and the home are the newer uses of gardening recognized, but many philanthropic agencies and institutions of detention for all classes of children, dependent, delinquent, or defective, in many countries, find agricultural work and exercise effective in the training for citizenship and the civic virtues of application, discipline, and the regard for public and private property.

A large percent of the boys placed out from all city institutions are sent to homes on farms.

Out of the hundreds of children placed by the Children's Aid Society of this state in country homes, a vast majority of them have become farmers or farmers' wives. The strong appeal for more school gardens throughout the state that was made last month at the State Charities Conference in Lynn, can not fail to be effective. The working exhibit of school gardens at the Jamestown Exposition, under the management of the International School Farm League of New York, indicates the importance to which the organized work has attained.

The particular institutional work about which Mr. Adams has asked me to tell you a little today, is that which has been done for a few years at the Orphans' Home in New Bedford.

Gardening was first undertaken at the Home to provide a pleasant, profitable employment for the summer vacation, especially one that would continue the steady influence and accomplishment of the public schools.

The variety of processes and the outcome of gardening is so attractive that it encourages a habit of occupation; the sequence of development so delightful that it appeals to the interest and fixes the attention of the most wayward child.

While its history may not always furnish suggestions for future guidance, yet it was interesting to read the account of the school garden established in 1695 for an Orphans' Home in Halle, Germany.

Much more definite and helpful accounts were read of the work in other European countries and of the notable work in our own country.

It was impossible to decide what books of theory were most helpful, for we read the best obtainable from the long list now published. The devices and technical details of the practical work were adapted to the specific needs of our children from six to eleven years of age.

Our work is designed to provide special teaching and training in the simple forms of agriculture, to emphasize its importance and necessity, and to open a new world of ambitions for success in future accomplishment. An instance not unusual is that of a bright English boy of eleven years who has shown a remarkable aptitude and skill in raising flowers and vegetables. His patience and perseverance the long season through have never failed; digging and hoeing in the early morning and faithfully dragging out the nearly two hundred feet of hose to water the garden at sunset.

Looking across the harbor one day at the Fairhaven home of Mr. H. H. Rogers, he said, "When I leave the Home I 'm going over to ask Mr. Rogers for work in his greenhouses. Some day I may get to be his head gardener!"

Our work is also designed to give a motive to and organize activity. The boys have instruction in carpentry and wood working during the winter and until we begin work in the garden. Both boys and girls assist in the housework, but gardening is the favorite occupation.

Much of the instruction was individual as part of the doing was undoing what had been indifferently or wrongly done. Various individual characteristics appeared in the garden work — carelessness, invention, and trading, among others.

The girl who does not sweep behind the door raised pigweeds with her carrots; the boy who can never locate his cap left the watering pot to be run over by an automobile.

Interest was keen for possibilities of trading and exchange of products with outsiders.

One of the business ventures planned was explained by one of the boys — "I can trade one of these jack-lantern squashes with a boy in my class, for a hen. You see if I had a hen I could tie it by his neck to a stake and he could scratch these worms to death!" This boy has since been placed

out on a New Hampshire farm where his experience and working judgment in raising vegetables will be of service to him and his knowledge of hens increased on acquaintance.

In passing along the streets other gardens were observed and commented upon; sometimes the boys had to be restrained from calling upon the owners of such gardens in their search for definite, usable knowledge. Ignorance of what others are doing sometimes causes mistakes and prevents the stimulus of a helpful feeling of rivalry. We were helped in this matter, for the children often shouted across the wall of the adjoining grounds to ask the interested gardener what kind of beans he planted, or if he sprinkled his rose bushes with whale-oil soap water as we did. Everything pertaining to our work was eagerly discussed by the children while reviewing what they had learned with the director. In summing up the advantages of gardening, one boy spoke better than he knew when he said, "It is such a *hopeful* job!" A stimulus for effort was found in recognizing the child's individuality in production. If Henry raised a mammoth cabbage he had the credit, not the Orphans' Home on Taber St.

Our garden was divided into individual plots and the common or family garden in which all the children worked, also a plot for experiment.

At planting time the most attractive bears and wolves of Ernest Thompson Seton were neglected for the more fascinating catalogues of plants and seeds. In each child's plot he had a choice of seeds for flowers, with six kinds of the smaller vegetables, those of the perishable kind, also carrots, beets, and onions.

In the common garden we had large plots of the same kinds of vegetables and various kinds of beans, pease, corn, cucumbers, tomatoes, melons, squash, cabbages, and parsnips.

Of the latter several bushels remain in the ground over winter. An abundance of flowers, selected as to height, bordered the walks and sides of the garden, with fifty feet of scarlet geraniums fronting the street. A small hot-bed gave us a few early vegetables. In spite of late planting we had fairly early vegetables in plenty, and by a rotation of planting kept up a constant yield. The keen enjoyment of the children in supplying the Home with vegetables was not the least of the benefits. The lawns, our "grass gardens," were not in good condition as a result of a shallow soil in which plantain had choked out the weak, short-rooted grass. Another year it will be necessary to change the fertilizer and sow the hardy, strong-growing blue-grass and red-top seed, that endure drought and shade. An extensive addition has been made to the Home grounds this year, including the garden plot which has previously been loaned for that purpose. A few sycamore trees were set out, also rose bushes, syringas, and clematis. It is probable that choice deciduous and hardy evergreen trees and shrubs will be planted in the new grounds. This will be of value in supplementing the study of trees as included in the nature work of the schools. In making our gardens we made many friends. Much interest was shown in our efforts and in the growth of the garden from 900 to 9000

square feet. The gardens were attractive by reason of the quantity and quality of the vegetables and flowers, and satisfactory according to our needs and purposes. The produce for the year was all for which we could hope, with one or two exceptions. After supplying the Home with vegetables through the summer, we have several barrels stored for winter use.

The greatest gains and advantages of school gardens to institution interests do not appear in statistics; they are not alone in the physical benefits, as one of the facilities of preventive hygiene, or entirely the result of observation and experiment in plants. A development of the primal instinct of gardening has been to the boys and girls of this institution more than the growing of potatoes and posies. It has been the expression of their desire to create, to watch the process and development of growth that was dependent upon their personal efforts and efficiency. Its ethical benefits have tended to develop the "social conscience" and the sense of fellowship through the contact with the things of nature that have made such generous returns for the loving care bestowed.

School Garden Reports.

Report of the Armory Street School Garden at Springfield, Mass.

BY FLORENCE M. ABBE.

The first school garden in connection with the Armory Street School was started in 1905. It proved successful and extremely popular with the children and has been continued ever since.

The garden work is carried on by the fifth grade pupils, the regular science period being used for this work.

Each child had a plot of ground 8 feet long by 2½ feet wide, separated by walks one foot wide. The entire class of forty-two pupils worked in the garden at the same time.

There were forty-four garden plots this year, one of the two extra beds being used by the teacher to illustrate the work to be done during the class period by the children, and the other used to give pupils practice in transplanting, so that they might be successful in work of that kind in their home gardens; also as a place where plants of each kind were allowed to go to seed, to show seed formation.

The city furnishes the necessary tools, stakes and line, and weeders for each pupil; and has the garden dug over and marked out. After that

the children take entire charge, buying their own seed — the penny packages being obtained.

One half of each garden is given to vegetables and the other half to flowers. The children are allowed as much choice as possible in the selection of flower seeds to be planted. This year for vegetables, tomatoes, cauliflower, radishes, lettuce, and beets were selected. For flowers, each child had a choice between marigolds or zinnias, asters or coreopsis, pansies or California poppies, pinks or snapdragon, and lobelia or candytuft.

Each child had a row of tomato plants, one of cauliflower, two rows of lettuce, and two of radish; the lettuce and radish were planted for succession about a week apart. After the gathering of the lettuce and radish, beets were planted in their stead to teach the children the continuous use of the ground.

In the other half of the garden each one had two rows of zinnias or marigolds, two rows of asters or coreopsis, while the California poppies and pansies were sown broadcast. The lobelia or candytuft was used as a border on three sides of the section in which the pinks or snapdragon were sown.

Each child has whatever his garden produces, either to sell, carry home, or give away. Little of the produce is sold, most of the children preferring to take theirs home to show or give away.

The pupils are taught the proper arrangement of the flowers in vases and then they pick and arrange them for the schoolrooms. Whenever a member of the school or friend is ill they gather flowers and the bouquet is sent from the school. Many bunches of radishes are sent from the garden each spring. One child asked permission this fall to pot some pansies from her garden to carry to a schoolmate who was ill.

The garden work is correlated with the other studies. This year in Manual Training the boys made the stakes for measuring, and later bought the materials and made the hoops to support the tomato plants. Language Spelling, Drawing and Science are also closely allied to the outdoor work. The pupils watch for harmful insects and much interest was taken in a few toads which were found in the gardens. A cutworm was allowed to develop into a moth in the schoolroom, so that the children might recognize this pest in every stage.

The greatest difficulty is in the care of the gardens during the summer vacation. No one but the owners are allowed to work in them and when they are to be away they try to find someone who will care for their garden during their absence in return for the produce. Considering everything, this is quite successful.

The majority of the pupils who have gardens at school also have them at home, using there the knowledge gained of soils, insects, depths for planting, transplanting, etc., thus applying at home what they have practiced at school.

Report of the South End Industrial School Garden, Roxbury, Mass.

BY MISS S. MYRTA ABBOTT, TEACHER.

There has been since 1902 a garden in connection with the South End Industrial School; the first year the garden was in Medford, the second year in the yard of the School at Roxbury, and now for three years in a lot adjoining the School in the midst of the crowded tenement district. Situated as it is between a double row of tenements, this garden plot is of more service than can be estimated. All summer long it is a bright spot of verdure and blossom and by careful manuring and enriching of the soil it has been made to yield almost a hundred fold.

The development in the surrounding tenements has been interesting to watch. The vacant plot with the stone pile in the middle had been the happy dumping ground for these tenements. And so the first year there was a motley collection of tomato cans glowing in among the real tomatoes. But the second year a change was noted; the tenement dwellers began to use the back piazzas for a sort of open air sitting room. This past summer the change has been almost complete. Porch curtains have been put up and window boxes and stands of all sorts for plants have blossomed forth into color. And the garden is unmolested!

The garden plot 54 × 120 ft. is divided into twenty-two plots each 12 × 15 ft. A stone pile is in the center of the garden and a three foot border of perennials and annuals encloses the whole garden. New features this year have been a great success. The stone pile was luxurious with nasturtiums planted in the soil in the top of the mound, in every crevice of its sides, and at the base. Throughout the summer hardly a stone could be seen the leaves and trailers were so luxuriant, and each week there was a bushel of gorgeous blossoms. Golden glow and hollyhocks were set against the brick and stone wall and were very effective with zinnias and bachelor buttons and phlox and cosmos about the roots; the yellow marigolds banked against the golden glow and cosmos and rose zinnias against the hollyhocks. Another new feature was the border one foot wide of each child's favorite flower in his own garden. There were more flowers this year than ever before and the keen enjoyment was sufficient excuse for it.

The vegetables grown were of uniform excellence. Each child had in his garden a bordering edge of parsley, then a foot band of flowers flanked by two rows of radishes, one row of lettuce, two rows of beets, three rows of beans, and one row each of carrots, kohlrabi, parsnip, and New Zealand spinach. Each child had also in his garden three tomato plants and three cabbage plants. All this was managed by careful planning as to succession of crops and by utilizing every available inch of space. Vacant spaces were filled in with extra plants from the seed bed with lettuce, with kohlrabi and with kale.

Three crops of radishes, two of lettuce and two of beans — golden wax and string — were grown. Each child paid twenty-five cents for the privilege of having a garden and realized many dollars worth of vegetables, sometimes sold, more often taken home and used for the family.

The garden suffered little from the prevailing drought of the summer. For by the courtesy of the committees of the Industrial School water was piped down direct to the garden, and the children watered assiduously on their garden days,— twenty or more pots of water to each individual plot being the rule.

One week from the date of the Massachusetts Horticultural Society Show an exhibit was held at the Industrial School. Each child had a table covered with white paper for his or her own exhibit in the big sewing room of the school. The tables were loaded with vegetables and bordered with parsley, and with flowers everywhere in tall vases the room was quite in gala attire. Outside the garden itself was on exhibition and even this late in the summer made an excellent showing. It is a significant fact that although the children had taken their vegetables all summer as soon as they were ready, that although a sufficient number had been gathered for the Horticultural Exhibit to fill one of their long tables, that although each child took all she wanted for her table at the Industrial School that there should be ample and to spare left in the gardens themselves so that it took a number of weeks to get the gardens cleared out and put in shape for the winter.

The produce was enough to warrant any expenditure of time, labor, and money at this garden of the Industrial School. But the produce is not the only testimonial. A love for growing things has been planted in the children's hearts and a sense of the need for both beauty and utility in the great plan.

Home Garden Reports.

Report of the Marlborough School and Home Industrial Association.

BY O. A. MORTON.

The Marlborough School and Home Industrial Association submits herewith a report of the work done during the year.

Gardening as a phase of industrial work had been discussed for some time, but nothing definite had been done because there was not a school lot in the city that adapted itself to garden work.

Last spring the subject of home gardening was discussed with the school

committee and the advisability of encouraging home industries emphasized. The committee was unanimously in favor of the entire plan as outlined and voted a small sum of money for the purpose of starting the work.

A general meeting of all the grade teachers of the city was called. The superintendent of schools outlined the plan of home gardening and other home industries which had been very successfully worked out in another place. The possibilities of such work and the opportunities that it furnishes the teacher to know the children more intimately and to come in touch with the parents and homes in a pleasant and profitable way were discussed.

The chairman of the school committee who has much practical knowledge on the subject and is an enthusiastic believer in such work was present and spoke very earnestly in behalf of the plan. The whole subject was then discussed very carefully by the teachers who voted unanimously to introduce this line of manual training as a part of the regular work of the department.

The teachers appointed six of their own number to co-operate with three members of the school committee and the superintendent of schools in forming a permanent organization to carry out the plan. The appointed members met and organized by electing officers. The whole plan was definitely outlined, the organization named "The Marlborough School and Home Industrial Association," and the aims and rules as submitted were adopted.

The best books were purchased and placed at the disposal of the teachers who entered upon the work with a determination to make it a success. Meetings were held, directions formulated and typewritten for the teachers, and printed suggestions furnished the children.

The nature study period in each school was used to instruct the children. After the most important points in selecting suitable plots had been developed in the class and the children had talked them over with their parents at home, they made their choice, planned and measured the plot. The results were put on paper to a scale, and filed with the teachers. In many instances, the teachers visited the proposed gardens and with the parents aided the children in seeing needed changes that would make the chances of success greater.

A meeting of all the pupils in the upper grades of the grammar schools was held in the high school hall, and the chairman of the school committee, who is a graduate of the Massachusetts Agricultural College, addressed them on the preparation of the soil and the method of planting the seeds that had been selected.

Seven thousand eighty-three penny packets of seeds were sold to about a thousand children. As this was the first year that any work of this kind had been attempted, as the work was wholly voluntary, no child being urged, and as there were only one thousand three hundred three children in the grades where the work was to be taken up, the fact that so many volunteered is very significant.

The name and address of each child was kept on file at the office of the superintendent of schools and also at the school where the child attended. Each teacher selected a list of gardens that she would visit and for which she would become responsible.

When the schools opened in September, it was found between seven and eight hundred children had been rewarded with some degree of success. Blank cards to be used in entering their gardens for the special garden prizes were distributed, and four hundred sixty-eight were filled out and returned to the teachers. From this list, after visiting and inspecting each garden, the teachers selected about one hundred to be visited by the committee on home gardens. This committee consisted of prominent members of the local grange who devoted a long and strenuous day to driving from home to home, examining gardens, taking data, and making photographs. The size, general plan, care and beauty of the gardens surpassed the expectations of the most sanguine.

A meeting of the committee was held and the size of each exhibit was fixed on as follows: Flowers — one to five vases of one to twenty-five blooms. Vegetables — beets, three to twelve; beans, one to four quarts; carrots, one to four bunches — three to ten in a bunch; lettuce, one to six heads; squashes, one to six; radishes, one to four bunches — three to ten in a bunch; sweet corn, three to twelve ears; turnips, three to twelve.

Tables were arranged in the high school hall, vases and agate plates were hired of a local dealer, and three judges for each group were selected from different organizations of the city. The teachers apportioned the work of decorating the hall, receiving, marking and arranging the exhibits among themselves.

The exhibit included not only the products of the garden but all the industrial work that the children had been doing. Although the hall is quite large, the exhibit had to be crowded in order to get all into the space assigned. With this compact arrangement, we had seventy-five feet of three-foot tables covered with flowers; eighty-five feet of similar tables covered with vegetables; thirty-five feet covered with wood work; fifty-five feet devoted to cooking; twenty feet to miscellaneous articles, and six hundred seventy-five feet of wall space covered with needle work.

Invitations in form of tickets had been sent to parents and friends. The hall was crowded with visitors from one o'clock in the afternoon to ten o'clock in the evening. Everyone seemed to enjoy the exhibit and to have a good social time.

The committees worked during the afternoon and evening in judging and awarding prizes. The list of prize winners was announced the next day in the local paper. As we have the stamp saving system, stamps to the value of each prize were placed on the prize cards that had been filled out and signed by the members of each committee. These cards were presented to the children at the schools by the teachers. All seemed pleased and the prospects for the coming year are very encouraging.

One hundred seventy-five dollars was raised among the business men of the place for the prizes and to defray other expenses. All the seeds were paid for by the children.

Report of the Waltham Home Garden Association.

BY MYRTA MARGARET HIGGINS, GARDEN DIRECTOR.

The Waltham Home Garden Association started in its second season (1907) with 1295 entries of home gardens from boys and girls under 16 years of age. This is an increase of 653 over the number entered last year. Several gardens started at summer homes and elsewhere could not be reported, though we are glad to know that our flowers bloomed at Cape Cod, Nantasket, and other places. Of the 1295 who made entries this year, 171 failed to start a garden. Of the 1115 started within the city 365 gardens did not result well. There were 170 of some merit; a larger number than made entries last year. 254 gardens were fair, 149 gardens were good, and 345 gardens were excellent. The mark of excellence was given to those gardens which had obtained good growth and were kept free from weeds. As yet little has been attempted in the way of design, for many of the children do not know even the difference between weeds and flowers, and they often wait until the director comes before they weed their gardens, fearing they may pull up the wrong plant, as many a child has done. Lessons on weeding take up much of the director's time, for many children do not know how to take a weed out of the ground.

Of the number who did not plant their seed, very few failed to do so from lack of interest. Sickness, moving, lack of encouragement from the parents, or discouraging difficulties were the reasons usually given. In some cases the children were deprived of the ownership of a garden because the parent took the seed, telling the child that he did not know how to plant a garden. Some of the parents made no better garden than the children could have made themselves. The child learns by doing, and should be given a small plot and a few seeds to call his own. It is possible to teach a child without taking from him the pleasure and the value of experience. It is well to tell him how large a plant may grow, for he does not always realize the difference in size between the seed and the plant. The result is that he plants the seed too thickly even for thinning out. Teach him that a few plants well cared for will give greater reward than more not well grown.

Those gardens which did not result well sometimes failed from lack of good care, but often were spoiled by babies, cats, dogs, chickens, rabbits, cows, and horses. In fact, it seems as if all the lovable creatures of the animal world were enemies of the garden. Poor soil was sometimes the

cause of failure. In some cases good soil was obtained and brought to the garden. The cold, rainy spring, and the drought in summer, discouraged many.

It is a significant fact, and a good sign of progress that nearly all the boys and girls who did well last year have done still better work this year.

Several new lawns were made this year planted with our grass seed. Some of the children deprived of land have done good work in flower boxes, which ought to be encouraged.

All the gardens were visited twice and the excellent ones were visited the third time by the judges. The best ones were given a fourth visit. Seven young women volunteered to make part of the first visits, and the association and director thank them for their services. Every garden was seen at least once, and those in the thickly settled parts of the city twice by the director herself who made about 1700 visits out of 2400.

In April about twenty-two talks were given in the schools by the director. The various subjects discussed were Tools, Location, Plans, Preparation of Ground, Fertilizers, Planting, Transplanting, Flower Boxes, Watering, Cultivation, Weeds, and Insects. The usefulness of toads and birds was also discussed.

At the North Grammar and Stearns Schools small vegetable and flower plots were started where the children had the opportunity of object lessons in the subjects which had been talked about in the school rooms. In addition, miniature landscape plays afforded not only fun, but a good opportunity to suggest that small flower beds should not be allowed to encroach upon the lawn space but should be arranged along the borders and fences and made to beautify the back yards. Simple designs, neatly kept were shown to be better than elaborate schemes which look absurd unless given elaborate care. Less interest was shown at the North Grammar Yard and the garden beds finally gave way to bad treatment and the difficulties of a poor location. A fence is needed to keep off intruders for when plants first come up they are not easily seen. At the Stearns school the interest was lively throughout the season, even though many of the products were taken, and replanting was necessary so many times it was hard to obtain a good growth.

The value of garden work to the city is partly told by the pictures which show what children can do to make rough places look bright with flowers and foliage. Lessons in the care of public and private property are gradually being learned; for when a boy becomes the owner of a garden he does not like to have it molested, and there awakens in his mind a sense of the value of property. The property owner wishes an orderly city for the benefit of his property, if for no other reason. We must make our boys and girls property owners, by encouraging them in the ownership of a garden.

The value of the work to the individual can never be told, but the words of the mothers tell us in part,— "It is the best thing that ever was started. It gives my boy something definite to do through the vacation. It is

healthful work, and a pleasure as well. He has earned money from his vegetable plot. He sends flowers to the sick. The girl loves flowers and now she can have all she wishes."

Only those who have worked with the children of the streets know how hungry they are for color. This healthful desire should be cultivated and made use of to choke out less desirable tendencies. Not one mother has been heard to say that she did not believe in the garden idea, and some who do not appreciate the kindergarten see the value of this work. If the garden existed for no other reason than to give the boy and girl a wholesome occupation, it were enough.

The little children of kindergarten age should be allowed to buy penny packets of seed even though they cannot contest for a prize. One little kindergarten boy has helped an old lady to make a corner of your city look bright this season. The little five-year-old girl who wrote to Congressman Tirrell from Waltham has voiced the feelings of those little ones whom we should not forget because they are small. Her letter ran thus,— "Dear Sir, I came across your address on an envelope in the street and would like to know would you please send me some flower seeds as I am a little girl and love flowers. I love nasturtiums, morning glories and carnations but I don't know how to raise carnations. I am just getting my ground ready and if you send me some I shall be very thankful to you and would send you some flowers in an envelope when they grow. Does roses grow from seeds? Please tell me. I love roses. I hope you will send me some next week. I remain M. L., Waltham, Mass., age 5 years 7 months." The kindergarteners of the city did good work with the mothers and children by starting plants in paper flower pots, and sending them home to be set into the ground. Some of the plants thus started obtained good growth and the reward was appreciated.

One morning a group of children was found gathered in a narrow ally between two houses. This and the dirty street was their playground. The object of interest was a dying plant in a tin can. The little girl who tried to make it live was discouraged and had thrown it out upon the ground when the "Garden lady" appeared. It was too late to save the tin-can garden, but a few flower seeds and the story of how to make a flower-box made the little girl smile again and consent to have her picture taken. Many stories might be told which show you how anxious the children are to have gardens. Those who have nice gardens now hope they will never be without one again.

Landlords do much to help or hinder this work. We were sometimes told that the landlord was pleased to have grass seed or flower seeds planted, and occasionally he helped on the work by a contribution of shrubs or perennials. In other places the landlord requested that the land be not broken for a garden. These places seldom have model lawns. There is nothing that makes a place attractive, and therefore raises the value of the property, more than a well-kept lawn and garden, yet many people when having a house built are not careful as to the disposal of the sand thrown

from the cellar, but leave it covering the surface soil about the house, and the occupants find it hard to make anything grow, and are deprived of that educative and home-making element — the garden.

The desire to win a prize sometimes calls forth undesirable qualities on the part of parents and children, but without the associated effort, and without the acknowledgment of work well done, the individual home-garden work would not accomplish as much as it now does. We are glad to say that the right feeling is uppermost, and the people desire the garden for its usefulness and beauty.

The kindness that has been shown the garden director has been fully appreciated, and the pleasant voices saying, "Here comes the Flower-lady" were so often heard that there was no fear of not being kindly welcomed.

There is every sign that the work of the Home Garden Association is firmly rooted and will have a perennial growth. The people desire to continue the garden work and many feel as one mother did when she said,— "We enjoy our garden. I don't see why we never thought of having one all these years, until it was suggested to us. Think how much we have missed."

Report of the Reading Home Gardens.

BY MRS. EMILY M. BABCOCK, READING, MASS.

The Reading Woman's Club, in May, 1907, voted that its Garden Committee be allowed the sum of one hundred dollars for the season's work.

The various schools in town had been visited in April and the names obtained of the children ready to begin their gardens; these pupils were in the fourth to the eighth grades, inclusive.

With the sum named we were enabled to appoint Mr. Hubbard, local superintendent of the Moth Commission, also Tree Warden of the town, as supervisor of our Home Gardens. This, indeed, was a step in advance, for previous summers the gardens had been visited but once or twice, irregularly, by a few interested club members who noted conditions and gave a word of encouragement to the children.

Seventy-five boys and girls carried on their gardens perseveringly throughout the summer, a most trying one. The least number of visits made any one garden was three, many four and five times. When it is considered that the gardens are scattered (at least five miles) from one part of the town to the other, it may form some idea of the work involved.

In August pictures were taken by Mr. Hubbard of the most promising gardens, with the young gardeners. These photographs were mounted and shown at our annual exhibition, also at the meeting of the Woman's Club in October. At the close of the season they were given to the children.

September 18, at the hall of the Highland School, our fourth annual exhibit was held. The display of flowers and vegetables, although not as large as in previous years, was excellent, due largely to our supervisor's instructions. Prizes were awarded at this exhibition. The flowers afterwards were sent to Mrs. Shaw's Settlement House, Ruggles St., Boston, and the vegetables to the Home for Aged Women here in Reading.

Fifty of our children wrote a story of their summer work, describing the care of the gardens, the products and what was done with them. These boys and girls were entertained October 11 by the Woman's Club and eight prizes awarded by Mrs. Henry Robinson, the President, for compositions.

The children furnished the decorations for the afternoon and the compositions were conveniently placed for inspection.

Our prizes, pictures, and incidental expenses were paid for by private subscription.

We hope that the improvement shown in our Home Gardens, under the direction of a supervisor, will lead in the near future to the establishment of a School Garden.

Report of the Fairhaven Home Gardens.

BY SARA B. CLARKE, FAIRHAVEN, MASS.

This, our second year of work in home gardens, has been eminently satisfactory. Fifty-four children purchased seeds which were supplied them at half the original cost. Thirty-nine of these children had gardens worthy of notice, and prizes varying in amount from two dollars to twenty-five cents were awarded to twenty-seven of the young gardeners.

Many of the children were most enthusiastic over the work, and the results obtained were really surprising, considering the existing conditions of the summer.

Four of the children sent specimens of their products to the Massachusetts Horticultural Society's exhibition in September, and two of the four were awarded prizes. One of these exhibitors, a boy in the sixth grade, had a vegetable garden that might well have been a source of pride to a "grown-up," every bit of it his own work, even to the first spading.

We hope this work, which now seems fairly well started is going to grow, and each year will find many homes made attractive and often beautiful, by the efforts of our boys and girls.

Prizes and Gratuities Awarded, 1907.

For the Best Collection of Vegetables from a School Garden:

First.— Cobbet School, Lynn	$6 00
Second.— South Natick Garden Club	5 00
Third.— Woman's Club, Melrose	4 00
Fourth.— Church Home Garden, South Boston	3 00
Fifth.— Woman's Club Garden, Watertown	2 00

Special Prizes.

The Homecroft Gardens, Watertown	1 00
South End Industrial School Garden, Roxbury	1 00
Rogers' School Garden, Fairhaven	1 00
Boys' Club Garden, South Lancaster	1 00
Stoneham Children's Garden, Stoneham	1 00

For the Best Collection of Flowers from a School Garden:

First.— Tracy School, Lynn	5 00
Second.— Cobbet School, Lynn	4 00
Third.— Rogers' School, Fairhaven	3 00
Fourth.— South Natick Garden Club, South Natick	2 00
Fifth.— South End Industrial School, Roxbury	1 00

For the Best Collection of Vegetables from a Child's Home Garden:

First.— Roger Newton Perry, Worcester	5 00
Second.— Allen W. Hixon, Worcester	4 00
Third.— Leon Briggs, Ayer	3 00
Fourth.— Ralph Brown, Ayer	2 00
Fifth.— Alfred Boiseau, Ayer	1 00

Special Prizes.

David Hubbard, Ayer	50
Ruth M. Lawson, Reading	50
Ralph J. Mason, Reading	50
Stephen Ryan, Ayer	50
Joseph Gloria, Fairhaven	50
Marion Lovewell, Wellesley	50
Frank A. Woods, Groton	50

For the Best Collection of Flowers from a Child's Home Garden:

First.— Roger Newton Perry, Worcester	3 00
Second.— Melvin White, Reading	2 50
Third.— James A. Park, Reading	2 00
Fourth.— Chester Gould, Reading	1 50
Fifth.— Esther Fay, Reading	1 00

Special Prizes.

Etta Northrop, Wellesley	105
Ruth M. Lawson, Reading	50
Jennie Marshall, Fairhaven	50
George W. Lawson, Reading	50
Harold S. Wagner, Roslindale	50
Marion Lovewell, Wellesley	1 00

For School Gardens.

First.— Cobbet School, Lynn	10 00
Second.— Fairhaven School, Fairhaven	8 00
Third.— Boys' Garden Club, Framingham	6 00
Fourth.— Armory Street School, Springfield	5 00
Fifth.— Wellesley School, Wellesley	5 00
Sixth.— Homecroft School Garden, Watertown	5 00
Seventh.— Watertown Woman's Club School Garden, Watertown	5 00
Eighth.— Edgeworth Industrial School, Malden	5 00

Special Prizes.

South Natick Garden Club, South Natick	5 00
Church Home Garden, South Boston	5 00
South End Industrial School, Roxbury	5 00
Orphans' Home, New Bedford	5 00

For School Grounds.

First.— Tracy School, Lynn	8 00

For Children's Home Gardens

First.— The School and Home Industrial Association, Marlborough	10 00
Second.— Waltham Home Garden Association, Waltham	8 00
Third.— The Cobbet School Home Gardens, Lynn	6 00
Fourth.— Reading Home Gardens, Reading	5 00
Fifth.— Wellesley Home Gardens, Wellesley	5 00
Sixth.— Fairhaven Home Gardens, Fairhaven	5 00

STARTING A GARDEN

Amount of Appropriation for 1907	$200 00
Amount Awarded	189 00
Unexpended Balance	11 00

HENRY SAXTON ADAMS
EDWARD R. COGSWELL, JR.
HARRY S. RAND
W. E. C. RICH
WILLIAM P. RICH

Committee on Children's Gardens.

REPORT OF THE DELEGATE TO THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1907.[1]

The work of the State Board of Agriculture the past year may be briefly outlined as follows:

Meetings.

The annual meeting for transaction of routine business, election of officers and committees, etc., was held on January 8 and 9. Special business meetings were also held at Great Barrington, June 25, and at Worcester, August 13. Meetings of the Executive Committee acting for the Board were held at Boston, March 28, April 30, and July 19. Meetings of other committees of the Board were also held during the year. Summer field or demonstration meetings were held at Great Barrington, June 25, and at Worcester, August 13. These latter meetings were markedly successful in points of attendance, quality of demonstration work, and interest manifested. The annual public winter meeting for lectures and discussions was held at Horticultural Hall, Boston, December 3, 4, and 5 and was an unusually successful meeting. The lectures and discussions were of a high order and the meeting was one of the most satisfactory held in later years.

Annual Report.

The annual report of the Board was issued in August, somewhat later than usual, and contained 753 pages of printed matter relating to agriculture and kindred subjects.

Book on Birds.

A book or special report on the birds of the Commonwealth,

[1] I am indebted to Mr. Frederick H. Fowler, Clerk of the Board, for this transcript of its work for the year.

economically considered, which was authorized by the Legislature of 1905, was prepared by the Ornithologist to the Board, Mr. Forbush, and issued in March. The volume contained 457 printed pages and appeared under the title "Useful Birds and their Protection." The supply for general distribution was quickly exhausted and the Legislature was obliged to authorize another edition of the book.

Other Publications.

Other publications of the Board consisted of six issues of the monthly publication known as the "Massachusetts Crop Report" and a reissue of several Nature Leaflets. The "Arbor Day Pamphlet" of the previous year was continued and as before was distributed very largely for use in the public schools.

Trespass Extracts.

The extracts from the trespass laws, printed on cloth, and which were authorized by the Legislature of 1904 were distributed to applicants, the number of which, however, was considerably less than in 1906.

Inspection of Fairs.

Members of the Board performed the customary duties of visiting and inspecting the annual fairs of the several agricultural societies.

Conference on Rural Progress.

An important conference on rural progress assembled at the office of the Board on March 8. Representatives from the New England States representing officially State departments of agriculture, education, the agricultural colleges, experiment stations, church interests, civic leagues, etc. An organization for future work along the same lines was effected at this conference.

Legislation.

There was little legislation during the year affecting the Board

or its work. Aside from the usual appropriation bills the more important legislation had to do with the duties of the State Nursery Inspector and the State Forester; also with the book on birds already alluded to.

Changes in Nature of Work of the Board.

That changes in the nature of the work of the Board have taken place in recent years and are still taking place is well known to those who are most familiar with its history and work. The present and future demand is quite different from that of a decade or more ago. One indication of the change taking place is the attitude of those working in the public schools of the State and its higher institutions of learning towards the Board and the educational work it is trying to do. Dissemination of information in agricultural matters seems to be one of the most important functions, if not the most important function, at the present day.

William H. Spooner,
Delegate.

December 31, 1907.

REPORT OF THE INSPECTOR TO THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1907.

To the Massachusetts Board of Agriculture: —

As Inspector of the Massachusetts Horticultural Society I have to report that its work during the past year has been carried on with unabated interest. The sum of $5,500 was appropriated for prizes and gratuities, which have been awarded for the encouragement of those engaged in horticultural and agricultural pursuits.

Thirteen public exhibitions of the products of the garden, greenhouse, and farm have been held during the year in the society's building, and it is not too much to say that they have fully equaled in tasteful arrangement and comprehensiveness any previous exhibitions of the society.

While the floricultural exhibits have attracted, naturally, the most attention, it is noteworthy that the displays of fruits and vegetables have been also centers of interest on the part of the visitors, and the philosophic observer cannot fail to be impressed with the educational value of these exhibitions and their influence in calling attention to the desirability of country life.

Another feature of the year's work was an exhibition, in September, devoted exclusively to the products of children's gardens, which called forth a very creditable showing on the part of the young gardeners.

In addition to the various exhibitions a course of ten free lectures was given during January, February, and March, covering a wide range of horticultural subjects. These were delivered by experts in the several lines and attracted large and interested audiences. A valuable feature of these lectures was the opportunity offered for general discussion and for the answering of questions, of which the audiences availed themselves very freely.

Respectfully submitted,

Francis H. Appleton,
Inspector.

Boston, December, 1907.

REPORT OF THE DELEGATE TO THE THIRTIETH BIENNIAL SESSION OF THE AMERICAN POMOLOGICAL SOCIETY.

As a delegate from this Society it was my privilege to attend the Thirtieth Biennial Session of the American Pomological Society, held in the Exposition Grounds at Jamestown, Va., September 24th to 26th, 1907. There was a goodly attendance of members and delegates, coming from the various sections of the United States and Canada, including several veteran fruit growers of the early days of the Society. Also prominently present were representatives of the Experiment Stations of the different States who were ready to give an account of their work. President Goodman kept the papers and the discussions well in hand, so that much ground was covered, with unflagging interest.

A prominent topic for reports, discussion, and conversation was the breeding of new varieties by cross-fertilization. The sessions of this society would appear to afford the proper forum for reporting and comparing the work in this direction by the State Stations, which have the facilities for careful, scientific, and continuous experiment in obtaining definite results.

The skilful cultivator, as well, who has a quick and observant eye, may have a wider field and will often arrive at conclusions, with happy results. Such outside work is valuable and should receive encouragement, but it is evident it must be desultory and the reliance in this case must mainly be upon lucky chance. The scientific expert, however, proceeds upon well established laws of heredity. There is no magic or necromancy in his work. There is no such folly as attempting to *create* new kinds. His wise effort is to cross fertilize, recognizing distinguishing traits in the parents, hoping thereby to develop higher traits in the offspring.

The International Society is the natural medium where all such experiments in cross.breeding, as well as all chance finds should be reported and collated. In my opinion our Massachusetts Society

should keep in touch with the National Society in its wider and more varied, but kindred interests.

The exhibition of fruits was limited, and no new variety, worthy of special mention, was noticed, with the possible exception of the King Grape, a "bud sport," so called, from the Concord, which is reported on good authority to be superior to its parent.

Respectfully submitted,

WM. C. STRONG,
Delegate.

Waban, November, 1907.

REPORT OF THE COMMITTEE ON LECTURES AND PUBLICATIONS FOR THE YEAR 1907.

BY WILLIAM P. RICH, CHAIRMAN.

The duties of the Committee on Lectures and Publications, as defined by the By-Laws of the Society, are that it "shall superintend all publications of the Society and have the direction in each year of such lectures and essays on horticultural subjects as may seem to the committee to be expedient, including that provided for by the John Lewis Russell Fund."

In compliance with these instructions two numbers of the Transactions have been issued during the year, those of 1906 Part 2 and 1907 Part 1, thus continuing without a break the method of publication begun in 1874. Previous to the latter year one number annually was issued.

A still more prompt publication of the Transactions is desirable and can be accomplished if the reports of committees and the papers of lecturers are more expeditiously placed in the hands of the Secretary.

A course of ten lectures, arranged by the Committee of the previous year, was given in the months of January, February, and March, as follows:

January 12. The Iris and its Culture. By J. Woodward Manning, Reading.

January 19. Peach-growing Possibilities in New England. By Adin A. Hixon, Worcester.

January 26. The Collecting of Orchids. By John E. Lager, Summit, N. J.

February 2. The Renovation of an Old Orchard. By George T. Powell, New York.

February 9. The Home Vegetable Garden. By John W. Duncan, West Roxbury.

February 16. Certain uses of the School Garden. By Miss Anne Withington, Boston.

February 23. Forestry from a Commercial Standpoint. By Prof. F. Wm. Rane, Boston.

March 2. Planting for Streets and Waysides. By John A. Pettigrew, Boston.

March 9. Some Bacterial Diseases of Plants: Their Nature and Treatment. By Prof. H. H. Whetzel, Ithaca, N. Y. (The John Lewis Russell Lecture).

March 30. Gardens of Italy; with stereopticon illustrations. By John K. M. L. Farquhar, Boston.

The course proved highly satisfactory, and the average attendance was 124, considerably larger than that of recent years. The papers presented at these meetings have been published in full in the Transactions for 1907 Part I.

The committee considers these annual courses of lectures on horticultural subjects as important aids in the work of the Society, and it should be remembered that a much larger audience is reached through their publication than is present at the hearing of them.

WM. P. RICH
J. WOODWARD MANNING
WALTER S. PARKER
J. A. PETTIGREW
EDW. B. WILDER
Committee.

REPORT OF THE SECRETARY AND LIBRARIAN FOR THE YEAR 1907.

The few items deemed worthy of record in the annual report of the Secretary and Librarian do not present an adequate summary of the business of these two offices. The usual routine of daily duties, the many requests for information on matters of horticultural interest, both in person and by correspondence, and the attention given to the numerous details connected with the various exhibitions comprise a multitude of minor matters which are not of sufficient importance to claim notice in this report but are the things that make up a great part of the year's work.

To these duties have been added since January 15 the general superintendence of the Society's building in accordance with the administrative changes adopted by the Board of Trustees early in the present year.

Thirteen exhibitions have been held during the year. The public interest in them has been satisfactorily maintained and from a horticultural point of view they have been fully up to the Society's high standard of excellence.

The continuing of the Saturday exhibitions over Sunday has met with an appreciative response on the part of the public and has been a successful innovation, the attendance having been much larger than on Saturday.

The two meetings of the Society required by the By-laws, the Inaugural Meeting in January and the Annual Meeting in November, have been duly held and also ten meetings for lecture and discussion in January, February, and March.

The publications of the year and the dates of issue are as follows:

January 24. Schedule of Prizes and Exhibitions, 48 pages.

July 16. Transactions, 1906, Part 2, pages 85–273 and Plates 1–11.

October 7. Transactions, 1907, Part I, pages 1–136.

The Library.

A year's practical experience with the new system of classification

adopted in 1906 has proved satisfactory and it is believed that it will be equal to the needs of the library for many years to come.

The systematic arrangement of the collection of American and Foreign Horticultural Trade Catalogues has shown more clearly its value and it has been consulted frequently by specialists during the year. It is believed to be the most important collection of its kind in this country.

Through the continued generosity of a devoted friend of the Society eight additional glazed bookcases were constructed early in the year, thus providing suitable protection for all the valuable folios and many of the quartos, besides adding to the architectural finish of the library.

A count of the books was made during the summer showing 17440 volumes, including all miscellaneous pamphlets which are now classed as books as they are bound in board covers as promptly as possible. There are also 300 cases of trade catalogues.

With a desire to enlarge the usefulness of the library the experiment was tried during the year of opening it to members and the public on Sunday afternoons from 2 to 6 o'clock. Suitable announcement was made through the press and by other means and the building was freely opened every Sunday afternoon from April 21 to October 27.

The number of persons, however, desiring to avail themselves of the opportunity offered was so few that it was decided to discontinue the experiment during the winter months, and it may be found more desirable to open the library one or two evenings a week for the benefit of those who are unable to make use of it during the hours in which it is now open. The Library Committee will be glad to consider any suggestions in this matter.

Among the accessions of the year are the following:

Barron, Leonard, Lawns and How to Make Them.
Beattie, W. R., Celery Culture.
Bisset, Peter, The Book of Water Gardening.
Burgerstein, Prof. Dr. Alfred, Die kaiserl. königl. Gartenbau-Gesellschaft in Wien. 1837–1907.
Castle, R. Lewis, The Book of Market Gardening.
Chorlton, William, The Cold Grapery.
Clark, George H., and James Fletcher, Farm Weeds of Canada.

Coit, John Eliot, A Peony Check-List.
Cook, E. T., Carnations, Picotees, and the Wild and Garden Pinks.
Daubeny, Charles, Plants of the World.
Dawson, Sir J. William, The Geological History of Plants.
Dean, Richard, and others, The Dahlia; its history and cultivation.
Descriptive and Historical Account of the Cotton Manufacture of Dacca, in Bengal. 1851.
Downing, A. J. A Treatise on the Theory and Practice of Landscape Gardening. 1841.
Dunn, S. T. A Preliminary List of the Alien Flora of Britain.
Elgood, George S., Italian Gardens.
Farmers' Cabinet, Vols. 1 to 12. 1837 to 1848.
Farrer, Reginald, My Rock Garden.
Follwell, Percy, The Book of the Chrysanthemum.
Forbush, Edward Howe, Useful Birds and their Protection.
Fosdick, Lucian J., Cranberry Culture.
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Gardiner, John, and David Hepburn, The American Gardener, 1804.
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Sevey, Glenn C., Bean Culture.
Simon, Léon, et P. Cochet, Nomenclature de tous les noms de Roses. 2e Ed.
Steele, Richard, The Husbandsman's Calling, 3d Ed.
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Wilmore, W. W., The Dahlia Manual.
Wythes, George, and Harry Roberts, The Book of Rarer Vegetables.

William P. Rich,
Secretary and Librarian.

REPORT OF THE TREASURER FOR THE YEAR 1907.

MASSACHUSETTS HORTICULTURAL SOCIETY *in account current with* WALTER HUNNEWELL, *December 31, 1907.*

DR.

To paid for Exhibition Ware			$552 92
" " " Library from Appropriation	$293 06		
" " " " " Farlow Fund	84 23		
" " " " " French Fund	256 65		633 94
" " " Heating	1,071 18		
" " " Lighting	1,149 08		
" " " Labor	2,328 70		
" " " Water Rates	95 10		
" " " Stationery, Printing, and Postage	1,570 69		
" " " Insurance	1,016 40		
" " " Incidentals	787 84		
" " " Repairs	961 58		
" " " Committee on Lectures and Publications	267 35		
" " " Salaries Treasurer, Secretary, Assistants, etc.	3,160 73		
" " " Salaries Committee on Plants and Flowers	397 00		
" " " Salaries Committee on Fruit	175 00		
" " " " " " " Vegetables	177 00		
" " " " " " " Prizes	250 00		
" " " Tax and Sewer Assessment in South Boston	459 86		
" " " Medals	136 03		14,003 54
" " " Prizes Plants and Flowers	3,480 90		
" " " " Fruit	1,051 93		
" " " " Vegetables	1,127 00		
" " " " Gardens and Greenhouses	31 38		
" " " " Children's Gardens	147 00		
" " " " H. H. Hunnewell Fund	160 00		
" " " " H. A. Gane Fund	16 00		6,014 21
" " " $5000 General Electric Co's Bonds bought			5,164 20
" Balance Dec. 31, 1907 (Treasurer and Bursar)			13,429 65
			$39,798 46

Cr.

By Balance Dec. 31, 1906					9,733 22
" received from Rent halls etc.			3,543 00		
" " "	Annual Exhibitions	$1376 35			
" " "	Less Expenses	527 95	848 40		
" " "	Membership Fees		960 46		
" " "	Mt. Auburn		2,259 42		
" " "	State Bounty		600 00		
" " "	Sale of Transactions		2 50		
" " "	Special Prizes		750 00		8,963 78
" " "	J. A. French bequest		3,000 00		
" " "	B. V. French "		5,000 00		8,000 00
" " "	Sale of Rights Gen'l. Elec. Co.				1,935 00
" " "	Interest on securities for the following Funds:				
	S. Appleton		50 00		
	J. A. Lowell		50 00		
	T. Lyman		550 00		
	J. Bradlee		50 00		
	B. V. French		25 00		
	H. H. Hunnewell		200 00		
	W. J. Walker		117 72		
	L. Whitcomb		25 00		
	B. B. Davis		25 00		
	M. P. Wilder		50 00		
	J. L. Russell		50 00		
	F. B. Hayes		500 00		
	H. A. Gane		50 00		
	J. S. Farlow		100 00		
	J. D. W. French		200 00		
	B. H. Pierce		32 00		
	J. C. Chaffin		40 00		
	B. V. French (new)		113 50		
	J. A. French		189 17		
			2,417 39		
" " "	Interest and dividends on securities other than those for the above Funds		8,749 07		11,166 46
					$39,798 46

WALTER HUNNEWELL,
Treasurer.

Approved:

S. M. WELD
A. F. ESTABROOK } *Finance Committee.*

Assets.

Real Estate	$518,564 63	
Furniture	10,171 80	
Library	44,603 53	
Stereotype Plates and Copies of History	238 50	
$2,000 Kansas City Clinton & Springfield Bonds	1,980 00	
10,000 Lake Shore & Michigan Southern Bonds	10,415 25	
21,000 City of Newton Bonds	24,228 75	
50,000 Atchison Topeka & Santa Fé Bonds	44,693 25	
50,000 Chicago, Burlington & Quincy, Nebraska Extension, Bonds	50,012 50	
10,000 Chicago & West Michigan Bonds	9,987 50	
25,000 Kansas City Fort Scott & Memphis Bonds	27,523 75	
50,000 Chicago, Burlington & Quincy, Illinois Division, Bonds	51,625 00	
8,000 Boston & Maine Bonds	8,710 00	
5,000 West End Street R'y Bonds	5,162 50	
5,000 General Electric Co. Bonds	5,164 20	
150 shares General Electric Co. Stock	7,745 70	
Hayes and Loring, Trustees	3,488 76	
Cash in hands of Bursar	5,734 85	
Cash in hands of Treasurer	7,694 80	
		$837,745 27

Liabilities.

Funds invested in Bonds and Stocks:		
Samuel Appleton Fund	$1,000 00	
John A. Lowell, "	1,000 00	
Theodore Lyman "	11,000 00	
Josiah Bradlee "	1,000 00	
Benjamin V. French "	500 00	
H. H. Hunnewell "	4,000 00	
W. J. Walker "	2,354 43	
Levi Whitcomb "	500 00	
Benj. B. Davis "	500 00	
Marshall P. Wilder "	1,000 00	
John L. Russell "	1,000 00	
Francis B. Hayes "	10,000 00	
Henry A. Gane "	1,099 00	
John S. Farlow "	2,516 12	

J. D. W. French "	5,002 24		
Benjamin H. Pierce "	800 00		
John C. Chaffin "	1,106 89		
Benjamin V. French " (new)	3,000 00		
John A. French "	5,000 00		
Balance Caroline L. W. French's account	17 30	$52,395	98
Prizes awarded for 1907, payable 1908	5,500 00		
" Gardeners' and Florists' Club	25 00		
" Coöperative Market	2 00		
" Special Prizes	90 00		
" Chrysanthemum Special	650 00	6,267	00
Surplus		779,082	29
		$837,745	27

WALTER HUNNEWELL,
Treasurer.

MEMBERSHIP OF MASSACHUSETTS HORTICULTURAL SOCIETY.

DECEMBER 31, 1907.

Life Members per last report (689–4)		685	
Added in 1907		16	
Commuted from Annual		4	
		705	
Deceased		25	
			680
Annual members per last report (163 + 1)		164	
Added in 1907		10	
		174	
Commuted to Life	4		
Resigned	6		
Deceased	5		
Dropped for non-payment of assessments for 2 years	4	19	155
Membership January 1, 1908			835

INCOME FROM MEMBERSHIP.

16 new Life Members @ $30	$480	00
4 Commuted to Life @ $20	80	00
10 New Annual Members @ $10	100	00
Assessments for 1907	300	46
	$960	46

WALTER HUNNEWELL,
Treasurer.

AUDITOR'S CERTIFICATE.

28 State Street, Boston,
January 25th, 1908.

To the Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen:

In compliance with your request I have made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the thirty-first day of December, 1907, and herewith submit to you my report of the same.

Report.

I proved the correctness of the ledger, journal and cash books and the small books tributary to the cash books, and saw that all balances were properly carried forward. I examined all vouchers and checks representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1908, to have been on hand and also examined the securities of the Society, finding them in all details in accordance with the requirements of the records. I traced all postings from the journal and cash books into the ledger and certify that the balance sheet taken from it as of the 31st day of December, 1907, is a correct abstract and that the Treasurer's statement of the assets and liabilities of the Society upon said date is true to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed and that the books and papers of the Society were in their usual excellent condition.

Yours very respectfully,

Andrew Stewart,
Examiner of Accounts.

THE ANNUAL MEETING, NOVEMBER 16, 1907.

ANNUAL MEETING FOR THE YEAR 1907.

The Annual Meeting of the Massachusetts Horticultural Society for the year 1907 was held Saturday, November 16, at Horticultural Hall, Boston.

President Weld presided and in calling the meeting to order stated that it was held in accordance with the By-Laws for the election of officers for the ensuing year and for the transaction of such business as might be legally presented; and that a printed notice of the meeting had been mailed to the address of every member of the Society as it appeared upon the records of the Secretary.

He appointed Edward B. Wilder, J. Allen Crosby, and William P. Rich a committee to receive, assort, and count the ballots, and to report the number. He then declared the polls open at twelve o'clock to continue open until four o'clock.

The record of the Annual Meeting of November 17, 1906, was read by the Secretary and approved by vote of the meeting.

The President reported that the Board of Trustees had voted an appropriation of $6700.00 for prizes and gratuities for the year 1908; an increase of $1200.00 over the amount appropriated for the present year.

Dr. Augustine Henry, professor of forestry in the University of Cambridge, England, on the recommendation of Prof. C. S. Sargent, was elected to corresponding membership in the Society.

William H. Spooner called attention to the public winter-meeting of the Massachusetts State Board of Agriculture which is to be held in our halls, December 3, 4, and 5, and invited the members of the Society to avail themselves of the privileges offered on this occasion.

At a quarter past twelve o'clock the President called Mr. Spooner to the Chair and declared a recess until four o'clock.

At four o'clock the Chairman announced the polls closed and the ballot committee proceeded to count the votes, reporting the number as follows: For President, Stephen M. Weld, 34; For Vice-President, Walter Hunnewell 34; For Trustees (for three years),

Walter C. Baylies 34, Charles W. Parker 34, John A. Pettigrew 32, and William Whitman 34; For Nominating Committee, William H. Bowker 31, John W. Duncan 34, J. Henry Fletcher 33, David F. Roy 34, and Wilfrid Wheeler 34.

The Chairman declared the list as follows to be the officers duly elected, in accordance with the requirement of the By-laws, for the year 1908:

President,	Stephen M. Weld.
Vice-President	Walter Hunnewell.
(for two years),	
Trustees	Walter C. Baylies.
(for three years),	Charles W. Parker.
	John A. Pettigrew.
	William Whitman.
Nominating Committee,	William H. Bowker.
	John W. Duncan.
	J. Henry Fletcher.
	David F. Roy.
	Wilfrid Wheeler.

The meeting was then dissolved.

William P. Rich,
Secretary.

NECROLOGY, 1907.

NECROLOGY, 1907.

Samuel King Bayley of Westwood, Massachusetts, died January 4, 1907. He was elected a member of the Society in 1904.

Robert M. Cushing, a member of the Society since 1864, died in London, January 9, 1907. He was the son of John P. Cushing whose well-known estate at Watertown, Massachusetts, was frequently mentioned in the records of the Society sixty years ago.

Mrs. Robert C. Hooper, who died in Boston, January 13, 1907, was the daughter of the late Frederick Lothrop Ames, and like her father was greatly interested in and a generous patron of horticulture. She became a member of the Society in 1902.

George F. Fabyan, a prominent merchant of Boston, died at his home in Brookline, Massachusetts, January 18, 1907, in the seventieth year of his age. Mr. Fabyan became a member of the Society in 1902. He maintained a fine estate at Brookline and was a liberal contributor of the products of his greenhouses to the exhibitions at Horticultural Hall. In 1905 he was elected a Trustee of the Society for three years, passing away before the completion of his term of office.

Fernald E. Ham, a member of the Society since 1900, died at Burlington, Massachusetts, January 21, 1907, at the age of seventy-one.

John P. Loftus, a member of the Society since 1875, died in Dorchester, Massachusetts, February 11, 1907, in his sixty-eighth year. Mr. Loftus was a well-known gardener in the vicinity of Boston for many years and at the time of his death was employed at the Mount Hope Cemetery, Mattapan. He was a veteran of the Civil War.

Abraham B. Coffin, for many years a resident of Winchester, Massachusetts, died at his home there March 9, 1907, at the age of seventy-seven. He was a graduate of Dartmouth College in the class of 1856. He became a member of the Society in 1900.

Edwin B. Haskell, a member of the Society since 1899, died in Auburndale, Massachusetts, March 25, 1907. Mr. Haskell was born in Livermore, Maine, August 24, 1837. At the age of sixteen he began work in a printing office and, after serving as a journeyman on various newspapers, in 1860 became connected with the Boston Herald. To this paper as reporter, editor, and proprietor he devoted his energies for the remainder of his life. He was interested in horticultural matters, as his beautiful estate at Auburndale testifies, and from 1896 to the time of his death was a member of the Metropolitan Park Commission.

Moses T. Stevens of Andover, Massachusetts, a member of the Society since 1899, and prominent in business and political affairs of the state, died March 25, 1907. From his estate at Andover he sent many collections of flowers and fruits to the exhibitions of the Society and was awarded many prizes in recognition of his interest in horticultural matters.

Felker L. Temple, formerly of Boston, died at his home in Hampden, Massachusetts, April 6, 1907. He became a member of the Society in 1884 and was well known as a nurseryman in New England. He was for many years one of the proprietors of the Shady Hill Nurseries at Bedford, Massachusetts.

John E. Hodgkins, formerly of Chelsea, Massachusetts, and a member of the Society since 1866, died at Portsmouth, New Hampshire, April 8, 1907.

Col. Henry W. Wilson, a member of the Society since 1871, died at his home in South Boston, May 7, 1907. Col. Wilson was born in Boston, October 17, 1834, was educated in the public schools of that city, and was a graduate of the English High School in 1851.

He was a civil engineer by profession and had charge of many important works in Boston and in other parts of the country. He was interested in military matters and served in the Civil War as an officer of the Sixth Massachusetts Regiment.

He was prominent in the affairs of the Society and deeply interested in its welfare, serving from 1885 to 1903, a period of nineteen years, as a member of the Committee on Gardens.

Dr. Maxwell T. Masters, for forty-one years editor of the Gardeners' Chronicle, London, died at his residence at Ealing, England, May 30, 1907, at the age of seventy-four. He was elected a corresponding member of the Society in 1869.

Dr. Masters was a notable figure in horticultural journalism and in addition to his editorial work on the Chronicle was the author of numerous publications on botany and horticulture of which especially should be mentioned his papers on the Coniferæ and his volume on Vegetable Teratology.

John Hill, a member of the Society since 1865, died at Chester Depot, Vermont, June 3, 1907. Mr. Hill was born at Stoneham, Massachusetts, January 23, 1822. He was a great lover of fine fruits and flowers and in his younger days used to cultivate them extensively.

William Cains, a member of the Society since 1845, died in Boston, June 8, 1907, at the age of ninety-two years and eleven months.

He was probably the last survivor of the membership of the Society for that year and was for many years engaged in the manufacture of glassware at South Boston, an industry established by his father in 1812.

Stephen Van Rensselaer Thayer of Boston died at Vichy, France, June 24, 1907, at the age of thirty-seven. He was elected a member of the Society in 1899.

Daniel E. Chase of Somerville, formerly of Watertown, Massachusetts, died at Potter Place, New Hampshire, July 12, 1907.

Mr. Chase was born in Warner, New Hampshire, October 21, 1829. He was elected a member of the Society in 1864.

Col. Walter Cutting of Pittsfield, Massachusetts, died in that town July 23, 1907, at the age of sixty-six. Col. Cutting was a veteran of the Civil War and was prominent in the business and political affairs of the state. He joined the Society in 1900.

Mrs. Mary Louise Stevens, who died at Brookline, Massachusetts, September 17, 1907, had been a member of the Society since 1897.

Mrs. Stevens was born in Cambridge, Massachusetts, September 9, 1840. In recent years she was much interested in botanical studies, devoting especial attention to the mosses, of which group she possessed a critical knowledge.

Edgar Sanders, a corresponding member of the Society since 1892, died at Chicago, September 29, 1907. Mr. Sanders was born in England, October 10, 1827, and came to the United States in 1853, engaging in horticultural work, and later as a commercial florist in Chicago.

He was also a frequent contributor to the horticultural press and was actively interested in all things pertaining to the advancement of the florists' trade.

Amor Leander Hollingsworth, a resident of Milton, Massachusetts, and a member of the Society since 1895, died October 4, 1907. He was a graduate of Harvard College in the class of 1859.

Charles W. Hallstram, a member of the Society since 1896, died at West Newton, Massachusetts, October 8, 1907, at the age of fifty-three.

Mr. Hallstram was much interested in high-bred cattle raising and in the cultivation of plants and flowers. He was a frequent exhibitor of the products of his garden at the Society's exhibitions.

Solomon Lincoln, prominent in the legal profession in Boston,

and a member of the Society since 1887, died at his residence in Boston, Otober 15, 1907, at the age of sixty-nine.

Francis W. Brewer died at his home in Hingham, Massachusetts, October 20, 1907, in his sixty-first year. He joined the Society in 1886. Mr. Brewer was greatly interested in horticultural matters and his fine estate at Hingham is considered one of the most beautiful on the South Shore of Massachusetts.

Obadiah Brown Hadwen of Worcester, Massachusetts, died in that city, October 24, 1907, at the age of eighty-three. He had been a member of the Society since 1875.

Mr. Hadwen was one of the best known men in the agricultural and horticultural organizations of New England. He was born in Providence, Rhode Island, August 2, 1824, and early in life engaged in agricultural pursuits which he followed successfully for more than half a century.

His interest in his chosen work extended beyond the boundaries of his own farm and he was active in the promotion of the agricultural interests of New England. His wide experience in horticultural matters, his business ability, and his unfailing courtesy caused him to be much sought after as an adviser and officer in many organizations. He was President of the Agricultural Club of Massachusetts and of the Worcester County Horticultural Society for a number of years up to the time of his death, and was President of the Massachusetts Horticultural Society from 1901 to 1903, inclusive.

Mr. Hadwen was greatly interested in ornamental tree planting and his estate at Worcester bears witness to his work in this line. In 1900 he gave an address before the Society entitled "A Half-Century's Experience with Ornamental Tree Planting" which was printed in the Transactions of the Society for that year.

To those favored with the privilege of association with Mr. Hadwen in the various organizations with which he was connected his death comes as a personal loss, but the beneficent influence of his noble character is a sweet remembrance to all who knew him.

Edward Jackson Brown, formerly of Brookline, died at Ken-

dall Green, Massachusetts, October 25, 1907, aged seventy-four years. He became a member of the Society in 1868.

James Herbert Veitch, a member of the well-known nursery firm of James Veitch and Sons, London, died November 13, 1907, at the age of thirty-nine years. He was elected a corresponding member of the Society in 1905.

George Edward Davenport, a member of the Society since 1872, died at his home in Medford, Massachusetts, November 29, 1907, at the age of seventy-four.

Mr. Davenport was born in Boston, August 3, 1833, where he lived until he took up a residence in Medford in 1875. From early life he was greatly interested in natural history studies, at length making a specialty of ferns in which subject he became an acknowledged authority. In 1875 he presented to the Society a valuable herbarium of ferns representing very fully the fern flora of the United States. This collection is frequently consulted by fern students from all parts of the country.

Mr. Davenport was thoroughly interested in the work of the Society and in addition to his botanical researches was a frequent exhibitor of plants and flowers from his garden at Medford. He was a member of the Committee on Flowers in 1897 and 1898, of the School Garden Committee from 1894 to 1899, and of the Library Committee from 1895 to 1904.

William Bliss, a member of the Society since 1881, died at his home in Boston, December 14, 1907. Mr. Bliss was born in Springfield, Massachusetts, December 11, 1834. He was connected with New England railroad interests the greater part of his life and was president of the Boston and Albany road for twenty-seven years.

William W. Edgar died at his home in Waverley, Massachusetts, December 18, 1907. He had been a member of the Society since 1892.

Mr. Edgar was born in England, April 28, 1843, and came to this country in 1867, finding employment in the vicinity of Boston where he was superintendent at various times of several notable

estates. In 1885 he went into business for himself, establishing a plant at Waverley which proved a financial as well as a horticultural success. Specimens of his productions were often exhibited at the Society's flower shows, the last being a collection of chrysanthemums at the November exhibition which obtained first and second awards.

Eugene Van Rensselaer Thayer died in Boston, December 20, 1907, at the age of fifty-two. He became a member of the Society in 1899. Mr. Thayer was the owner of a fine estate at South Lancaster, Massachusetts noted for its collection of beautiful plants and especially for its orchid houses, specimens from which were often displayed at the Society's exhibitions.

John Clark of Watertown, Massachusetts, died December 27, 1907, at the age of forty-four years. He was elected a member of the Society in 1905 and was employed in the seed business in Boston.

OFFICERS, COMMITTEES, AND MEMBERS, 1907.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1907.

President.

STEPHEN M. WELD, of Dedham.

Vice-Presidents.

WALTER HUNNEWELL of Boston.
CHARLES S. SARGENT, of Brookline.

Treasurer.

WALTER HUNNEWELL, of Boston.

Secretary.

WILLIAM P. RICH, of Chelsea.*

Trustees.

OAKES AMES, of North Easton.
WILLIAM N. CRAIG, of North Easton.
CHARLES F. CURTIS, of Jamaica Plain.
WILLIAM H. ELLIOTT, of Brighton.
ARTHUR F. ESTABROOK, of Boston.
GEORGE F. FABYAN, of Brookline.
JOHN K. M. L. FARQUHAR, of Boston.
ARTHUR H. FEWKES, of Newton Highlands.
ARTHUR D. HILL, of Boston.
JOHN LAWRENCE, of Groton.
J. WOODWARD MANNING, of Reading.
JOHN A. PETTIGREW, of Boston.

Nominating Committee.

ARTHUR F. ESTABROOK, of Boston.
WILLIAM NICHOLSON, of Framingham.
WARREN H. HEUSTIS, of Belmont.
LORING UNDERWOOD, of Belmont.
EDWARD B. WILDER, of Dorchester.

*Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

COMMITTEES FOR 1907.

Finance Committee.

WALTER HUNNEWELL, *Chairman.*
ARTHUR F. ESTABROOK, STEPHEN M. WELD.

Committee on Prizes and Exhibitions.

J. K. M. L. FARQUHAR, *Chairman.*
WILLIAM N. CRAIG, ARTHUR H. FEWKES, ISAAC H. LOCKE,
WILLIAM H. SPOONER, WILFRID WHEELER.

Committee on Plants and Flowers.

ARTHUR H. FEWKES, *Chairman.*
ROBERT CAMERON, WILLIAM N. CRAIG, T. D. HATFIELD,
WILLIAM NICHOLSON.

Committee on Fruits.

WILFRID WHEELER, *Chairman.*
CHARLES F. CURTIS, J. WILLARD HILL.

Committee on Vegetables.

ISAAC H. LOCKE, *Chairman.*
DUNCAN FINLAYSON, JOSIAH B. SHURTLEFF, JR.

Committee on Gardens.

CHARLES W. PARKER, *Chairman.*
OAKES AMES, GEORGE BARKER, WILLIAM N. CRAIG,
WILLIAM H. ELLIOTT, ARTHUR F. ESTABROOK, ARTHUR H. FEWKES,
JOHN A. PETTIGREW, WARREN W. RAWSON, WILLIAM P. RICH,
HENRY P. WALCOTT, STEPHEN M. WELD.

Library Committee.

CHARLES S. SARGENT, *Chairman.*
T. OTIS FULLER, SAMUEL HENSHAW, CHARLES W. JENKS,
HENRY P. WALCOTT.

Committee on Lectures and Publications.

WILLIAM P. RICH, *Chairman.*
J. WOODWARD MANNING, WALTER S. PARKER,
EDWARD B. WILDER.

Committee on Children's Gardens.

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Revised to December 31, 1907.

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Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Storrow, James J., Boston.
Stratton, Charles E., Boston.
Strong, William C., Waban.
Strout, Charles S., Biddeford, Me.
Sturgis, Richard Clipston, Boston.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.
Sylvester, Edmund Q., Hanover.

Taylor, Charles H., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, South Lancaster.
Thayer, Mrs. Bayard, South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, Henry J., Boston.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thiemann, Hermann, Belchertown.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Brookline.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Elbridge, Dorchester.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
Tufts, George W., Rockport.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.
Vining, R. William E., Hingham.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M. D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walsh, Michael H., Woods Hole.
Waltham, George C., Dorchester.
Walton, Arthur G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Park.
Watson, Benjamin M., Jamaica Plain.
Watson, C. Herbert, Brookline.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverley.
Webster, Edwin S., Chestnut Hill.
Webster, Frank G., Boston.
Webster, George H. Haverhill.
Webster, Hollis, Cambridge.
Webster, Laurence J., Holderness, N. H.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Readville.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfrid, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitman, William, Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Boston.
Wilde, Mrs. Albion D., West Roxbury.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, George Percy, Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Mrs. J. Bertram, Cambridge.
Williams, Mrs. Moses, Brookline.
Williams, Philander, Taunton.
Wilson, William Power, Boston.
Winsor, Robert, Weston.
Winter, Herman L., South Medford.
Wood, William K., Chicago, Ill.
Woodberry, Miss E. Gertrude, Cambridge.
Woodbury, John, Lynn.
Woodward, Mrs. Samuel Bayard, Worcester.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

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Alles, William H., Watertown.
Anderson, George M., Milton.

Balme, Juan, Jr., City of Mexico.
Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, South Natick.
Bennett, John W., Springfield, Vt.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Bolton, Sabin, North Easton.
Borst, Theodore F., South Framingham.
Bradley, Miss Abby A., Hingham.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.

Carpenter, Frank O., Boston.
Chandler, Alfred D., Brookline.
Chase, Joseph S., Malden.
Child, Stephen, Kendal Green.
Chubbuck, Isaac Y., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Boston.
Collins, Frank S., Malden.
Colt, Mrs. J. D., Chestnut Hill.
Cotter, Lawrence, Dorchester.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.
Cutting, Mrs. Isabelle Ladd, Lexington.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dorr, George B., Boston.
Doyle, William E., Cambridge.

Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.
Fitzgerald, Desmond, Brookline.
Forbes, William H., Jamaica Plain.
Francis, George E., M. D., Worcester.
Freeman, Miss Harriet E., Boston.
Fuld, Maurice, Boston.
Fuller, T. Otis, Needham.

Gardiner, John Hays, Cambridge.
Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, Belmont, Cuba.
Grey, Thomas J., Chelsea.

Hall, Harry F., Durham, N. H.
Hall, Stacy, Boston.
Harrison, C. S., York, Nebraska.
Hatfield, T. D., Wellesley.
Head, Thomas W., Groton, Conn.
Herff, B. van, New York, N. Y.

Heustis, Warren H., Belmont.
Hildreth, Miss Ella F., Westford.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hollingsworth, Miss Rose, Boston.
Hollis, George, South Weymouth.
Houghton, George S., Reading.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Howe, Miss Louise, Brookline.
Hubbard, Allen, Newton Centre.

Illenberger, Henry, Lake Geneva, Wisconsin.

Jack, Dr. Frederick L., Boston.
James, Robert Kent, Newton Centre.
Jameson, G. W., East Lexington.
Johnston, Robert, Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Salem.
Kennard, Frederic H., Brookline.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M., Roxbury.
Lawson, Joshua, Brookline.
Leuthy, A., Roslindale.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
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Low, Hon. Aaron, Essex.
Lumsden, David, Durham, N. H.

McKenzie, John, Milford, N. H.
McLaren, Anthony, Westwood.
MacMulkin, Edward, Boston.
Manning, A. Chandler, Reading.
Means, Arthur F., Somerville.
Meriam, Horatio C., D. M. D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Morgan, George M., Boston.
Morrison, William, Dedham.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nicol, James, Quincy.
Nixon, J. Arthur, Taunton.
Norton, Patrick, Dorchester.

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Parker, Eliab, Roxbury.
Parker, Walter S., Reading.
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Pritchard, John, Madbury, N. H.
Purdie, George A., Ormond, Florida.

Rane, Prof. F. W., Waban.
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Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robinson, Walter A., Arlington.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.
Ross, Walter D., Worcester.

Sanborn, Edward W., Boston.
Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Seaver, Robert, Jamaica Plain.
Sharkey, John F., Cambridge.
Sharples, Stephen P., Cambridge.

Shaw, Hon. Edward P., Newburyport.
Sim, William, Cliftondale,
Stuart, James, Brookline.
Symmes, Samuel S., Winchester.

Tailby, Joseph, Wellesley.
Thorpe, Joseph, Taunton.
Tingley, Mrs. Etta Fish, Greenwood.
Turner, Everett P., Arlington.
Tyndale, Theodore H., Boston.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Waugh, Prof. F. A., Amherst.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
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Whipple, Frank L., Lynn.
White, Miss Margaret, Cambridge.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wood, Elijah A., West Newton.

Young, E. Bentley, Boston.